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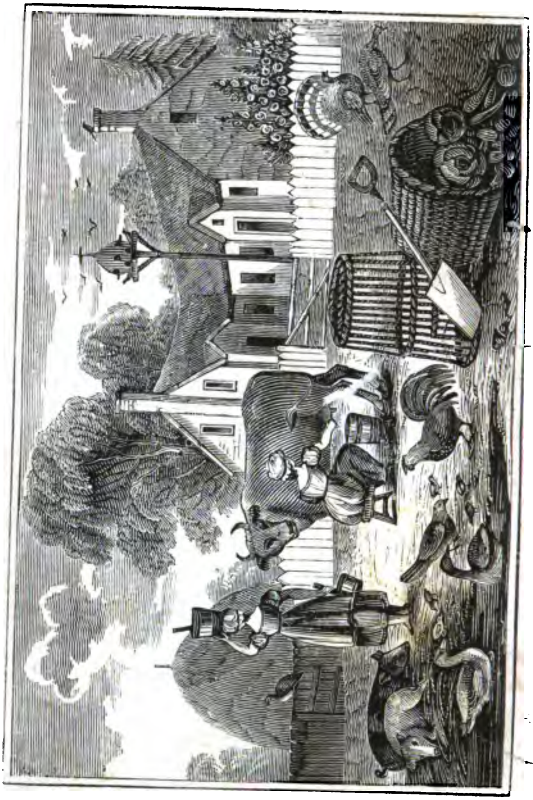

A
TREATISE
ON
BREEDING, REARING, AND FATTENING,
ALL KINDS OF
POULTRY, COWS, SWINE,
AND OTHER DOMESTIC ANIMALS.

Bonington

BY B. MOUBRAY, ESQ.

Reprinted from the sixth London Edition.

WITH SUCH ABRIDGMENTS, AND ADDITIONS,
As, it was conceived, would render it best adapted to the soil, climate,
and, common course of culture, in the United States.

BY THOMAS G. FESSENDEN, ESQ.
Editor of the New-England Farmer.

BOSTON:
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PREFACE

TO THE AMERICAN EDITION.

The popularity, and extensive sale of *Moubray's Treatise on Poultry*, &c, afford infallible proofs of the estimation in which it is held by the British public; and would seem to render an apology for reprinting it *verbatim*, in the United States, unnecessary. But a mere *copy* of the last English edition would embrace much matter, which could scarcely interest or amuse an American reader. A considerable part of the original work consists of local, personal, and transient topics; — of tales and anecdotes, the perusal of which would afford no profit, and not much amusement to readers in quest of *useful* information. These are omitted in the following work, and their place supplied by articles, original, or selected from other sources, such as *Ree's Cyclopedia*, the last American edition of *Willich's Domestic Encyclopedia*, papers originally published in the *New-England Farmer*, and the *American Farmer*, personal inquiries and observations, favours from correspondents, &c, &c.

We have omitted the articles on 'Bees,' 'Brewery,' and 'Cider,' which are contained in Moubray's Treatise, for these reasons. We have American treatises on the same subjects, which, if not better written, appear to us better adapted to our materials, customary processes, utensils, &c. Besides, we were apprehensive that by increasing the size of our volume, we might so far add to the price at which it can be afforded, as to limit its circulation among those for whose use it is principally intended.

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DOMESTIC POULTRY, &c.

SECTION I.

General View of the Various Species.

Under the term Domestic Poultry, are generally understood—the *Chicken* or *Fowl, Turkey, Duck, Goose, Pea* and *Guinea Fowl;* to which, perhaps, may be added the *Swan.* The wild varieties of the above species, of the duck more especially, are objects of pursuit to the sportsman, and to those inhabitants of the sea coasts, and of the vicinities of lakes and rivers, where wild fowl are taken in decoys for market.

CUSTOMS.

In Britain, where a greater quantity of butcher's-meat is consumed than probably in any other part of the world, poultry has ever been deemed a luxury, and consequently not reared in such considerable quantities as in France, Egypt, and some other countries, where it is used more as a necessary article of food, than as a delicacy for the sick, or a luxury for the table. In France, poultry forms an important part of the live stock of the farmer, and it has been said of that country, the poultry yards supply a much greater quantity of food to the gentleman, the wealthy tradesman, and the substantial farmer, than the shambles do; and it is well known, that in Egypt, it has been from time immemorial, a considerable branch of rural economy, to raise domestic poultry for sale, hatched in ovens by artificial heat. The warmer climates are far more favorable than ours for the purpose of raising poultry, and the same rule necessarily holds with respect to this country, where the warmest and dryest soils are best adapted to this production, more especially of the chicken and the turkey.

Mr Wakefield, a spirited farmer near Liverpool, say the Compilers of '*The Complete Grazier*,' keeps a large stock of poultry in the same inclosure, with singular success. He has nearly an acre inclosed with a close slab fence, about seven feet high: the top of the fence everywhere sharp pointed like pickets; though, perhaps, this is not necessary. Within this inclosure are put up slight small sheds, well secured from rain, however, for the different kinds of poultry, and it is supplied with a small stream of water. The poultry are regularly fed three times a day with boiled potatoes, which is their only food, except what grass may grow within the inclosure.

The dung of the poultry, which is exceedingly fertilizing, is carefully saved for use, and the turf of the inclosure is occasionally pared off for mixing with composts.

It would seem that, in the vicinity of large towns particularly, keeping poultry in this style might be made a profitable employment.

SECTION II.

Qualities of the Flesh of Poultry.

Gallinaceous fowls, or chickens. In the opinion of physicians, both ancient and modern, the flesh of the chicken at three months old, is the most delicate and easy to digest of all other animal food: thence best adapted to the stomachs of invalids, or the constitutionally weak, being the least alkalescent of all animal food, free from irritation, and affording a mild and innoxious chyle. Age makes a striking difference in the flesh of fowls, since, after the age of twelve months, it becomes tougher and more insoluble. The cock, indeed, at that age, is only used for making soup, whilst the pullet is still excellent, although a more substantial viand than the chicken. Whilst young, the cock and hen are equally delicate.

The **Capon**, or castrated cock, has ever been esteemed one of the greatest delicacies, preserving the flavour and tenderness of the chicken, with the juicy maturity of age, the flesh yielding a rich and good chyle, and without any tendency to inflammation. Capons, however, are usually *crammed*, and made excessively fat, perhaps to the verge of disease, in which state their flesh is neither so delicately flavoured, nor probably so wholesome as when more naturally fed. Indeed, the flesh of the barn-door fowl, or that fed in a state of nature, and at liberty to take exercise, is universally acknowledged to excel in genuine richness of flavour. There is probably greater variety of size, figure, and appearance in the chicken, than in any other species of fowl, and also considerable variety of quality, which will be pointed out under their different heads.

The TURKEY. The flesh of the turkey is somewhat more dense of fibre, and more alkalescent and substantial than that of the chicken, but it is reckoned nourishing and restorative. Age produces a similar effect as in the chicken, whence the turkey after a certain period, is good for little, except stewed.

GUINEA FOWLS are not so white of flesh as the common, but more inclined to the pheasant color; in quality, short and savoury, like the flesh of the pheasant, and easy of digestion. In fact, the guinea fowl is reckoned by many a good substitute for the pheasant. They are very prolific, and their eggs nourishing and good. These fowls are in season for the table when game is going out; namely from February to June; PEA FOWLS also are used in the same season. With our immense powers of production, we are yet an importing country, to a vast extent, of the necessaries of life. A few years since, upwards of the weight of twelve tons in turkies and other poultry were imported from France within ten days.

The **Peacock**, however, has long ceased to form a common dish for the table in this country, and probably, from its coarseness and ill colour, when it did, the motive was rather show than use; but pea-hens and pea-chicks still retain their place at fashionable tables.

Bustards. The Bustard is the largest land bird of Europe, the cock generally weighing from twenty-five to twenty-seven pounds. The neck a foot long, the legs a foot and a half. It flies with some little difficulty. The head and neck of the cock ash coloured; the back barred transversely with black and a bright rust colour. The greater quill feathers black, the belly white; the tail, consisting of twenty feathers, marked with broad black bars: it has three thick toes before and none behind. There are upwards of half a dozen species of this bird, two or three of which (African) are crested. The LITTLE Bustard, differs only in size, not being larger than a pheasant. They were known to the ancients in Africa, and in Greece and Syria; are supposed to live about fifteen years; are gregarious, and pair in spring, laying only two eggs, nearly of the size of a goose-egg, of a pale olive brown, marked with spots of a darker hue. They sit about five weeks, and the young ones run, like partridges, as soon as delivered from the shell. The cocks will fight until one is killed or falls. Their flesh has ever been held most delicious, and I suppose they are fed upon the same food as the turkey.

Perhaps it might be conferring a benefit to the United States, if some enterprizing patriot would import a few pairs of this bird. Our author asserts in another place: 'To those who aim at variety and novelty in this line, the Bustard appears peculiarly an object for propagation and increase; since the flesh is of unrivalled excellence, and it is probable this fowl will render great weight of flesh for the food consumed.'

The Aquatic Species.

The DUCK. The flesh of the duck of a savory and somewhat stimulant nature, is said to afford a preferable nourishment to that of the goose, being not so gross, and more easily digested: and that of the wild duck is reckoned still more easy of digestion than the tame, although more savoury.

The GOOSE. The whole anserine or goose tribe, of which there is a great variety, are held to afford a food highly stimulant, of a strong flavour and viscous quality, and of a putrescent tendency. The flesh of the tame goose is more tender than that of the wild, but generally it is a diet best adapted to good stomachs and powerful digestion, and should be sparingly used by the sedentary and weak, or by persons subject to cutaneous diseases.

The fat, or grease, of the goose, is more subtle, penetrating, and resolvent, than the lard of swine, and is an excellent article to be reserved for domestic use, in various cases. Sportsmen of the old school held the opinion, extraordinary as it may now seem, that when a kennel of hounds show symptoms of *rabies*, or madness, the best prophylactic remedy, is to keep a considerable flock of geese in it, for a length of time; and the late Dr James, exceedingly attached to dogs, inclined to give a degree of credit to this presumed remedy, which, if real, must consist in the saline and penetrative qualities of the anserine excrement: the danger, however, of exposing the geese to the possibility of infection, ought certainly not to be overlooked.

The SWAN. The Cygnet, or young swan, only, is reckoned eatable, and that after a peculiar preparation, although in old time, the swan formed a dish of embellishment and show at great feasts. Swan fat possesses probably much the same qualities as that of the goose above described, but is supposed somewhat more mild and emollient. Many curative virtues were attributed by the ancients to the swan's skin, but modern practice only sanctions its use as a defence against rheumatic affections; in fact, the only worth of the very few wild swans which reach a market, consists in their skins.

SECTION III.

GALLINACEOUS FOWLS.

Description and Management.

We have no history so ancient as the domestication of the common cock and hen. The cock was supposed to be of Persian origin, but the species has been since propagated and introduced into general use, throughout the whole world, from east to west, from the burning climate of India to the frozen zone. Although fowls used for the table are by nature granivorous, yet all the various species, the goose perhaps excepted, are carnivorous likewise, and great devourers of fish.

The principal VARIETIES in use, of the common species of FOWLS, are — DUNG-HILL FOWLS — GAME — DORKING — POLAND — BANTAM — CHITTAGONG, or MALAY — SPANISH, and their endless sub-varieties.

The common DUNG-HILL FOWL needs no description — of middling size, every variety of color, and to be found in every part of the country.

Game Variety.

GAME FOWLS are too well known to require a particular description. Their plumage, particularly the red, is most beautiful and rich; their size somewhat below the common, and their symmetry and delicacy of limbs to be compared with those of the race-horse and the deer, or, in more strict analogy, with the wild species of their own genus. The ancients kept game cocks for the same purpose as the moderns, and there is a game breed at present existing in India; but I have not hitherto obtained any information as to the origin of our game breed, which has been established during many centuries in this country. Their flesh is of the most beautiful white, and superior to that of all other breeds of domestic fowls, for richness and delicacy of flavour; but the extreme difficulty of rearing the chickens, from their natural pugnacity of disposition, which shows itself at the earliest possible period, deters most breeders, excepting those who breed for the cock-pit. I have many times had whole broods, scarcely feathered, stone-blind from fighting, to the very smallest individuals; the rival couples moping in corners, and renewing their battles on obtaining the first ray of light. On this account few can be reared, and as this disposition, to a certain degree, prevails in the half breed, it prevents crossing with the game cock, otherwise a great improvement. The game eggs are smaller than common, finely shaped and extremely delicate.

The GAME COCK has long been a bird of cruel sport in some parts of this country, as well as in Great Britain. But the taste for this amusement, as well as that for boxing and other barbarous pastimes, is happily on the decline in the United States, and in Great Britain. Indeed, we believe it was never much practised in New England.

The DORKING FOWL, so called from a town in the county of Surrey, [Eng.] is the largest variety of the species. Its shape is handsome, body long and capacious, legs short with two claws on each foot; eggs large and lays abundantly; color of the flesh inclining to yellowish or ivory. Both hens and cocks often made into capons.

The POLAND FOWL was originally imported from Holland. The color shining black, with white tops on the head of both cock and hen; head flat, surmounted by a fleshy protuberance, out of which spring the crown feathers. Their form plump and deep, legs short with five claws, lay abundantly, are less inclined to set than any other breed; they fatten quickly, and are more juicy and rich than the Dorking. This is one of the most useful varieties.

Every day hen is a sub-variety of the Poland Fowl, of Dutch origin ; they are of smaller size, and said to lay eggs in great abundance. Their tops are large, and should be periodically clipped near the eyes, or they grow into the eyes of the fowls and nearly blind them, rendering them very subject to alarm, and to be driven away. This is particularly necessary in wet weather.

From October 25th to the 25th of the following September, five Poland hens of this sub-variety laid 503 eggs, one of them only setting within the time. Their eggs are not so large as those of the common hen, nor equally substantial and nutritious.

Bantam, a small Indian breed, valued chiefly for its grotesque figure and delicate flesh.

There has been lately obtained a variety of Bantams, extremely small, and as smooth legged as a game fowl. From their size and delicacy they are very convenient, as they may always be used as substitutes for chickens, when small ones are not otherwise to be had. They are also particularly useful for sitting upon the eggs of partridges and pheasants, being good nurses as well as good layers.

There is a South American variety, which will roost in trees. They are very beautiful, spotted like a partridge and streaked ; the eggs small and colored, like those of the pheasant; both the flesh and eggs are fine flavoured and delicate.

The CHITTAGONG, or Malay hen, is an Indian breed, and the largest variety of the species. They are in color, striated yellow and dark brown, long necked, serpent-headed, and high upon the leg; their flesh dark, coarse, and chiefly adapted to soup. They are good layers, and being well fed produce the largest of hen's eggs, and of the most substantial nutriment. But their legs are too long to be steady setters.

The improved SPANISH COCK and hen is a cross between the Dorking and the Spanish breed. It is a large bird, with black plumage, white and delicate flesh, the largest eggs of any British variety, and is well adapted for capons.

The foregoing, according to our author, are the principal breeds of the Gallus species, which are known in Great Britain. We are not able to say what are the varieties of this useful bird, which have been introduced into this country, but we have observed considerable differences in their forms and habits. Some kinds have a greater propensity to ramble than others; and some are more apt to dig up seeds and injure vegetables in gardens, &c, than other varieties of the same species.

SECTION IV.

On breeding and rearing Chickens — the necessary Yards and Buildings.

THE warmest and dryest soils are best adapted to the breeding and rearing of gallinaceous fowls, more particularly chickens; thence the greatest success, attended with the least trouble, may be expected on such, and far greater precaution and expense will be required on those of an opposite description. Of these last, the wet and boggy are the most injurious, since, however ill affected fowls are by cold, they endure it still better than moisture, whence they are found to succeed well upon dry land, even in the severe climates of the north. Land proper for sheep is generally also well adapted to the successful keeping of poultry.

But as the rearing of poultry may be necessary upon soils and in situations of every description, made ground is sometimes indispensable. No considerable stock can be kept, far less can any profit be made by it, upon an unfavourable soil, without attention to needful artificial local conveniences.

Whether or not the poultry be suffered to range at large, and particularly to take the benefit of the farm-yard, a separate and well-fenced yard or court must be pitched upon. The foundation should be laid with chalk, or bricklayer's rubbish, the surface to consist of sandy gravel, considerable plots of it being sown with common trefoil, or wild clover, with a mixture of burnet, spurry, or star-grass, * which last two species are particularly salubrious to poultry. The surface must be so sloped and drained as to avoid all

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* Spurry (*Spergula arvensis*) is indigenous in Flanders. Loudon says it is cultivated on the poorest soils. It is so quick of growth and short of duration, that it is often made to take an intermediate place between the harvest and the spring sowing, without any strict adherence to the regularity of succession. It is sown sometimes in the spring, but generally in autumn, after harvesting the corn crops. One light ploughing is sufficient; and as the grain is very small it is but very lightly covered. About 24 pounds of seed to the acre is the usual quantity. Its growth is so rapid, that in five or six weeks it acquires its full height, which seldom exceeds 12 or 14 inches. The crop is of course a light one, but is considered of great value, both as supplying a certain quantum of provender at very little cost, and as being the best food for milch cows, to improve the quality of the butter. It lasts till frost sets in, and is usually fed off by milch cows tethered on it, but is sometimes cut and carried to the stalls.

Where spurry is sown in the spring the crop is occasionally made into hay; but from the watery nature of the plant it shrinks very much in bulk, and upon the whole is much more advantageously consumed in the other manner. It is indigenous in Flanders; and except when cultivated, is looked on as a weed, as in Great Britain.

stagnant moisture, most destructive to young chickens. The fences must be lofty, well secured at the bottom, that the smallest chicken cannot find a passage through, and the whole yard perfectly sheltered, from the north-west to the south-east. Various beds, or heaps of sifted ashes, or very dry sand, should be always ready, in which the hens may exercise that propensity, so delightful and salutary to them, of rolling or bathing themselves. This is effectual in cleansing their feathers and skin from vermin and impurities, promotes the cuticular excretion, and is materially instrumental in preserving their health.

The poultry-houses within the court, if there be a choice, should have a southern aspect, at any rate, should be well defended from cold winds and the blowing in of rain or sleet. If the number of the stock be considerable, the houses had far better be small and detached, both for health and safety sake, and especially they should be absolutely impenetrable to vermin of every description. Should these houses abut upon a stable, brew-house, or any conductor of warmth, it will be so much the more comfortable and salutary to the poultry.

The form and conveniences of the poultry-houses are these — the bottom or floor should consist of well-rammed chalk or earth, similar to the court-yard, that its surface being smooth, may present no impediment to being swept perfectly clean. For health's sake, the roof should be lofty ; the perches will be then more out of the reach of vermin, should any accidentally break in : and there should only be one long and level range of perches, because, when these are placed one above another, the fowls dung upon each other : convenient steps driven into the walls, will render easy the ascent of the poultry to their perches ; but care must be taken that the mistake be not made of placing these steps immediately one over the other, but in such wise, that they can jump from one to the other.

Boxes, of which every carpenter knows the form, are to be arranged round the walls, and it is proper to have a sufficient number, the hens being apt to dispute possession, and sit one upon another ; the steps will lead equally to these as to the perches. The board, or step at the entrance, to be of sufficient height to prevent the eggs from rolling out. Provision of a few railed doors may be made, for occasional use, to be hung before the entrance, in order to prevent other hens from intruding to lay their eggs upon those which sit, a habit to which some are much addicted, and by which a brood is often injured. The common deep square boxes, uncovered at top, are extremely improper, because that form obliges the hen to jump down upon her eggs ;

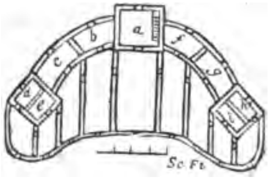
whereas for safety, she should descend upon them from a very small height, or in a manner walk in upon them. The same objection lies against hampers, with the additional one of the wicker-work admitting the cold, in variable weather, in winter or early spring sittings. It ought to be noted likewise, that many breeders prefer to have all their nests upon the ground, on account of the danger of chickens falling from those which are placed above. In this respect, persons will be best guided by their own experience.

Turkeys, being roosting fowls, may be kept in the yard of which we speak, either in a separate house, or their boxes, for laying or sitting, may be placed on the ground of the common houses; which last method, perhaps, is objectionable, since turkeys and common fowls might not roost quietly together. In the common way, indeed, poultry of all kinds, are associated in a common house, the cocks and hens aloft, and the ducks, geese, and turkeys upon the ground-floor. Or, upon an extensive scale, all the domestic poultry may be contained within the inclosure, the circular form for which would be most comprehensive and advantageous, including a piece of water, with laying-houses upon its banks, for the aquatic fowls, and dove-cotes for breeding pigeons. Some shutters may open to the morning sun, for air, and particularly for the benefit of the sitting hens.

Loudon says 'The poultry-yard in most cases may be a very small enclosure, as the poultry of common farmeries should be allowed to range over the straw-yards and most parts of the premises, to pick up what cannot be got at by swine.

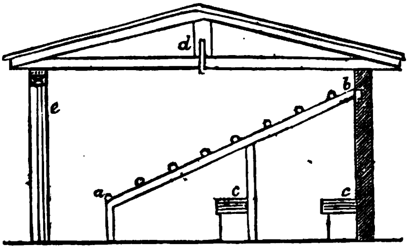
But when the business of raising poultry is carried on to a considerable extent, Loudon observes, that 'The situation of the poultry-house should be dry, and exposed either to the east or south-east, so as to enjoy the sun's rays as soon as he appears above the horizon. Though in many cases all the commoner sorts of poultry are lodged in the same apartment, yet to be able to bestow on each species its proper treatment, they ought to be separated by divisions, and enter by separate doors. Apartments for aquatic fowls may be made in part under those of the gallinaceous tribes, and the peacock often prefers roosting on a tree, or on the roof of high buildings, when it forms an excellent watch bird to the poultry yard or farmery.

Where a complete set of poultry-houses are intended, a situation should be fixed on near or close to the farmery, and with ample space around for the fowls to disperse over in the day time, and one or more ponds for the aquatic sorts. A space thirty feet by fifty feet may be made choice of for the buildings and yard; the building may be ranged along the north side, and the three other sides enclosed with a trellis or wire fence, from six to eight feet in height, and subdivided with similar fences, according to the number of apartments. The hen-house (*a*) and



turkey-house (*b*) may have their roosts (*c c*) in part over the low houses for ducks (*d*) and geese, (*f*, *g*, *h*;) and besides these there may be other apartments for hatching, or newly hatched broods, for fattening, to serve as an hospital, or for retaining, boiling, and otherwise preparing food, killing poultry, and other purposes. A flue may pass through the whole for moist or very severe weather; and the windows ought to have outside shutters both for excluding excessive heat and excessive cold. In every apartment there ought to be a window opposite to the door, in order to create a thorough draught, when both are opened, and also a valve in the roof, to admit the escape of the hottest and lightest air. Every door ought to have a small opening at bottom for the admission of the fowls, when the door is shut. The elevation should be in a simple style, and there may be a pigeonry over the central building.

The furniture or fixtures of poultry-houses are very few; the roost is sometimes a mere floor or loft, to which the birds fly up or ascend by a ladder; at other times it is nothing more than the coupling timbers of the roof, or a series of cross battens or rods, rising in gradation from the floor to the roof. The battens should be placed at such a distance horizontally that the birds, when roosting, may not incommode each other by their droppings. For this purpose they should be a foot apart for hens, and eighteen inches apart for turkies. The slope of the roost may be about 45°, and the lower part should lift up by hinges in order to admit a person to remove the dung. No flying is requisite in case of such a roost, as the birds ascend and descend by steps. See plate in which (*a. b.*) are spars for



the poultry to set on, (*c c*) ranges of boxes for nests, (*d*) the roof, (*e*) the door, which should be nearly as high as the ceiling, for ventilation, and should have a small opening with a shutter at bottom, which, where there is no danger from dogs or foxes, may be left open at all times, to permit the poultry to go in and out at pleasure, and especially for their early egress during summer. The spars on which the clawed birds are to roost, should not be round and smooth, but roundish and roughish like the branch of a tree.

SECTION V.

Choice and Treatment of Breeding Stock.

It should be a general rule to breed from YOUNG STOCK: a two year old cock, or stag, and pullets in their second year. Pullets in their first year, if early birds, will indeed, probably, lay as many eggs as ever after, but the eggs are small, and such young hens are unsteady sitters. Hens are in their prime at three years of age, and decline after five, whence generally, it is not advantageous to keep them beyond that period, with the exception of those of capital qualifications. Hens with a large comb, or which crow like the cock, are generally deemed inferior; but I have had hens with large rose combs, and also crowers, which were upon an equality with the rest of the stock. Yellow-legged fowls are often of a tender constitution, and always inferior in the quality of their flesh, which is of a loose flabby texture and ordinary flavour.

The HEALTH of fowls is observable in the fresh and florid colour of the comb, and the brightness and dryness of the eyes, the nostrils being free from any discharge, and the plumage of a healthy gloss. The most useful cock is generally a bold, active, and savage bird, cruel and destructive, in his fits of passion, if not well watched, to his hens, and even to his own offspring. Hens above the common size of their respective varieties, are by no means preferable either as layers or setters. The indications of OLD AGE are paleness of the comb and gills, dullness of colour, and a sort of downy stiffness in the feathers, and length and size of their talons, the scales upon the legs becoming large and prominent.

The NUMBER of hens to one cock, four to six, the latter being the extreme number, with a view of making the utmost advantage. Ten and even twelve hens have been formerly allowed to one cock, but the produce of eggs and chickens under such an arrangement will seldom equal that to be obtained from the smaller number of hens. Every one is aware, that the spring is the best season to commence breeding with poultry, and in truth it scarcely matters how early, presupposing the best food, accommodation, and attendance, under which hens may be permitted to sit in January.

The conduct of the cock towards his hens should be early and constantly attended to, as it is a common occurrence for him to conceive an antipathy to one or more particular individuals; should this continue, the obnoxious one should be removed, since nothing but misery can ensue to the unhappy and persecuted bird, which will be harassed and chased about, and unless when hiding and moping in corners, will be always liable to be torn and maimed; and various examples have occurred of a hen, under these circumstances, being instantly struck dead by the cock. Such a hen being removed, and replaced by a STRANGER, care should be taken for the first week or two, that she be not worried or injured by the other hens.

A place of REFUGE should be provided for hens or chicks in this unfortunate predicament. Whilst the young feathers are growing after moulting, poultry are extremely apt to peck and wound each other, retarding their recovery.

In making the NESTS, short and soft straw is to be preferred, because the straw being long, the hen, on leaving her nest, will be liable to draw it out with her claws, and with it the eggs. The hen, it is ascertained, will breed and lay eggs without the company of a cock; of course, such eggs are barren.

EGGS for SETTING should never exceed the age of a month, the newer to be preferred, as nearly of a size as possible, and of the full middle size; void of the circular flaw which indicates the double yolk, generally unproductive, nor should there be any roughness or cracks in the shells. NUMBER of eggs, according to the size of the hen, from nine to fifteen, an odd number being preferable, on the supposition of their lying more close. The eggs to be marked with a pen and ink, and examined when the hen leaves her nest, in order to detect any fresh ones which she may have laid, and which should be immediately taken from her, as they, if at all, would be hatched too late for the brood. It is taken for granted, the box and nest have been made perfectly clean for the reception of the hen, and that a new nest has not been sluggishly and sluttishly thrown upon an old one, from the filth of which vermin are propagated, to the great annoyance of the hen, and prevention of her steady sitting.

EGGS BROKEN in the nest, should be cleared away the instant of discovery, and the remaining washed with warm water, and quickly replaced, lest they adhere to the hen, and be drawn out of the nest: if necessary, the hen's feathers may also be washed, but always with warm water.

With respect to the CAPRICIOUSNESS of some hens in the article of SITTING, it is a risk which must be left to the judgment of the attendant, who has to determine whether or not the hen which appears desirous of sitting, may be safely trusted with eggs. Leaving a number of eggs in the nest is an enticement. Very frequently, a hen will cluck, and appear hot for incubation, yet after sitting over her eggs a sufficient number of hours to addle them, will then desert them: and, probably, in the course of a few days will be taken with another fit of incubation.

Much useless cruelty is too often exercised, to PREVENT the hen from sitting, when eggs, rather than chickens, are in request; such, for example, as immersing her head, or whole body in water, which I have witnessed with regret, the hen, as soon as dry, running to her nest, although the dipping has been repeated several days following. But, granting nature could be thus put out of her course, it is not probable that eggs would be obtained earlier than by suffering the hen to sit, since the improper treatment, and the disappointment combined, are nearly an equal impediment both to laying and sitting.

Moulting.

Every succeeding year after the third, the hen continues to MOULT later in the season, and laying fewer or no eggs during the moulting period, which is sometimes protracted to two or three months. It should seem that old hens are seldom to be depended upon for eggs in the winter, such being scarcely full of feather until Christmas; and then, probably, may not begin to lay till April, producing at last, not more than twenty or thirty eggs. In general, it is most profitable to dispose of hens whilst they are yet eatable, or saleable for that purpose, which is in the spring of the third year. Nor do delicate white hens lay so many eggs in the cold season, as the more hardy coloured varieties, requiring warmth and shelter, particularly by night. MOULTING, or the casting and renewal of feathers lasts, with its effects, from one to three months, according to the age and strength of the bird. Whilst under this natural course, poultry are unfit for the table, as well as for breeding. It is the same with respect to young poultry, whilst shedding their feathers in the spring. The regular moulting of full-grown fowls begins in the autumn.

Attention during Incubation.

There is this DISTINCTION in the hen: in some, the desire of sitting or incubation is predominant, which they will repeat to the fifth or sixth time in the year, to their emaciation or almost destruction: in others, the desire is so slight, that they will probably sit but twice, or even once in the season, and then not steadily. It is for the skilful breeder to take advantage of this variation of quality, the one kind furnishing plenty of eggs for the other to sit upon.

It is proper to place CORN and WATER beside the sitting hen, whenever it may appear necessary, withdrawing them as soon as she is satisfied, not only to encourage steadiness of incubation, but to support the constitutions of those, in which the natural excitement is so powerful, that they will remain several successive days upon the nest, at the risk of famishing. I have had instances of hens of this description fainting outright, and appearing as dead, on their final leaving the nest with the chickens, in a state of total emaciation, having, probably, not eaten or drank more than once in three or four days, during the TERM of their incubation, TWENTY-ONE DAYS. The plan of feeding on the nest, should be invariably pursued with all frequent sitters.

SECTION VI.

Hatching of the Brood.

THIS must be watched on the expiration of the term, in which the state of the weather, warm or cold, may make some hours' difference. Nature, as Reaumur long since observed, has committed to the chicken itself the task of breaking its way through the shell, the hen being totally uninstructed and unqualified on that point; for, indeed, any forcible strokes with her beak might have the effect of wounding the chicken, whilst it broke the shell. The only use of her bill, generally, in this case, is to turn, or remove the eggs, defend them, or cast out the broken shells. The chicken in perfect health and unimpeded, suddenly, at nature's impulse, performs the part of breaking its prison with wonderful strength and energy, indicative of future activity, considering the quiescent state, rolled up like a ball, in which it has laid from the time of its form being complete.

ITS FORM AND POSITION IN THE SHELL—the neck curves or slopes towards the belly, on about the middle of which the head is placed; the bill under the right wing, like a bird asleep; the feet are gathered up beneath the belly, like those of fowls trussed for the spit: the claws reversed, almost touch the head from their convexity. The fore-part of the chicken is generally placed towards the biggest end of the egg, adapted by nature to that purpose; the whole body is surrounded by a membrane of considerable strength and thickness, confining him in a position apparently the most unfavourable to the motions necessary to his emancipation: it is nevertheless without changing his attitude, that he performs his seemingly most difficult task; repeated strokes with his little bill, which may often be heard, break the shell of the egg, at the same time tearing the solid membrane, in which he is enveloped, and which resists his struggles, full as much as the hard but brittle shell.

Nor is the head at all at liberty, or released from the wing, during the struggle, the comparison in that respect, with a sleeping bird not coming up fully to the point, since the head of the chicken in the egg reaches farther under the wing, and the bill protrudes towards the back. The head, although in this confined state, by moving alternately backward and forward, and the reverse, or more exactly from the belly towards the back, and from the back towards the belly, reaches and strikes the shell, more or less roughly, according to the quickness of its motion:

whilst in action, it is in some degree guided by the wing and the body, which retain and prevent it from leaving its place. The head is very heavy and large, with respect to the bulk of the body, making together with the neck, a weight so considerable, that the chicken is unable to support it for some time after its birth. On the other hand, the manner in which all the parts are disposed, whilst yet in the egg, and in the form of a ball, renders the support of that weight of the neck and head, perfectly easy to the chicken: for in whatever position the egg may be, the head of the chicken is supported either by the body or by the wing, or by both united: in fine, the force of the blows against the shell by the beak, is powerful in proportion to the bulk of the head. The mother's affection for her brood is always observed to be intensely increased, when she first hears the voice of the chicks through the shells, and the strokes of their little bills against them.

All chickens do not despatch the important task in equal time. Some are able to disencumber themselves of the shell, in the course of an hour from the commencement of the operation; others take two or three hours; and generally it may be looked upon as half a day's work: in case of natural or accidental debility, the period may be extended to twenty-four, or even forty-eight hours, in which case, however, there is seldom much success in the hatching. Here skilful assistance is wanted from the attendant, which very few possess. Réaumur, the greater part of whose observations, such, I mean, as I have found leisure to attend to, appear to me correct, says the women of most countries in his time (1747) were in the habit of dipping the eggs in warm water, and suffering them to remain in it a short time, on the day of hatching, from the presumption of rendering the shell more tender and easy to be penetrated by the bills of the chickens. This, however, is a useless, perhaps injurious labour, since the shell of a boiled egg does not prove sensibly less hard; and granting it did, would soon reassume its primitive hardness, from exposure to the air and evaporation.

Assistance in Hatching

Must not be attempted prematurely, and thence unnecessarily, but only in the case of the chick's being plainly unable to extricate itself: so indeed, an addition may probably be made to the brood, as great numbers are always lost in this way. The chick makes a circular fracture of the big end of the egg, and a section of about one third of the length of the shell being separated, delivers the prisoner, provided there be no obstruction from adhesion of the body to the membrane which lines the shell. Between the body of the chicken and the membrane there remains a viscous fluid, the white of the egg thickened by the intense heat of incubation, until it becomes a real glue. When this happens, the feathers stick fast to the shell, and the chick remains confined, and must perish unless released.

The METHOD of assistance is, to take the egg in hand, and dipping the finger or a piece of linen in warm water, apply it to the fastened parts, until they are loosened, by the gluey substance being dissolved and separated from the feathers; the chick then being returned to the nest, will extricate itself, a mode generally to be observed, since violence used would often be fatal. Nevertheless, breaking the shell may sometimes be necessary, and tearing with the fingers as gently as may be, the membrane from the feathers, which are still to be moistened as above, to facilitate the operation. Small points of scissors may be useful, and when there is much resistance and apparent pain to the bird, the process must be conducted in the gentlest manner, and the shell separated into a number of small pieces. The SIGNS of a need of assistance are, the egg being partly pecked, and the efforts of the chicken discontinued for five or six hours. In commencement, the shell may be broken cautiously, by striking it with the end of a key; the rotten egg is known immediately by the motion of the contained fluid, and previous unsteady incubation.

Weakness from cold may disable the chicken from commencing the operation of pecking the shell, which must then be artificially performed, with a circular fracture, such as is made by the bird itself. Pullets are occasionally liable to cause this defect. We have had but little success in this case, the chickens after delivery seldom succeeding. Reaumur gives it as his opinion, that no aid ought to be given to any chickens but those, which have been nearly twenty-four hours employed, without getting forward in their work.

The chickens **first hatched** are to be taken from the hen, lest she be tempted to leave her task unfinished. Those removed may be secured in a basket of wool or soft hay, and kept in a moderate heat; if the weather be cold, near the fire. They will require no food for many hours, even four-and-twenty, should it be necessary to keep them so long from the hen. The whole brood being hatched, the hen is to be placed under a coop abroad, upon a dry spot, and, if possible, not within the reach of another hen, since the chickens will mix, and the hens are apt to maim or destroy those which do not belong to them. Nor should they be placed near numbers of young fowls, which are likely to crush young chicks under their feet, being always eager for the chickens' meat.

The FIRST FOOD, split grits, (hulled oats,) afterwards tail wheat; all watery food, soaked bread, or potatoes, improper. Eggs boiled hard, or curd chopped small, much approved as first food. Their water should be pure and often renewed, and there are convenient pans made in such forms, that the chickens may drink without getting into the water, which often, by wetting their feet and feathers, benumbs and injures them; a basin whelmed in the middle of a pan of water, will answer the end, the water running round it. Generally, and dependent on situation, and the disposition of the hen, there is no necessity for cooping the brood beyond two or three days, but they may be confined as occasion requires or suffered to range, as they are much benefited by the scratching and foraging of the hen. They must not be let out too early in the morning, or whilst the dew remains upon the ground, far less be suffered to range over the wet grass, one common and fatal cause of disease. Another caution is of the utmost consequence, to guard them watchfully against sudden unfavourable changes of the weather, more particularly if attended with rain. Nearly all the diseases of gallinaceous fowls arise from cold moisture.

For the period of the chickens QUITTING the hen, there is no general rule, the most certain is, when the hen begins to roost, leaving them ; if sufficiently forward, they will follow her; if otherwise, they should be secured in a proper place, the time having arrived when they are to associate with the young poultry, as nearly of their own age and size as possible, since the larger are apt to overrun and drive from their food the younger broods.

The incision necessary to be made in the distended and obstructed crop of a chicken pining and refusing its food, we practised with success — in the similar case of a hen, and of squabs or young pigeons. Such incisions being made and afterwards stitched up with a needle and thread as carefully as possible, the parts soon unite.

SECTION VII.

Hatching by Artificial Heat.

This is an Egyptian practice, mentioned by Diodorus and Aristotle, and was brought into notice about the middle of the eighteenth century by Reaumur. The requisite degree of heat is 90 degrees, which is supplied by fire, steam, or fermenting substances. After hatching, the birds are placed in a cage, in which is placed a lambskin, suspended from the roof of a box, and enclosed by a curtain of green baize, &c.

Our author details several methods of hatching chickens by artificial heat, but observes, no person will attempt artificial hatching, but from the motive of mere curiosity, and that motive must indeed be powerful to carry one through the endless labour and attendance required.

EGGS, FEATHERS, &C.

EGGS become desiccated, and in consequence lose great part of their substance and nutritive quality, by keeping, and every body knows the value of a fresh-laid egg. They will retain their moisture and goodness however, three or four months, or more, if the pores of the shell be closed and rendered impervious to the air, by some unctuous application. We generally anoint them with mutton suet melted, and set them on end, wedged close together, in bran, *stratum super stratum*, the containing box being closely covered. Laid upon the side, the yolk will adhere to the shell. They thus come into use, at the end of a considerable period of time, in a state almost equal to new-laid eggs, for consumption, but ought not to be trusted for incubation, excepting in the case of the imported eggs of rare birds. Another method of preservation has lately been recommended in print. To dip eggs in oil, and pack them in salt. At any rate, they ought not to be deposited on their sides. Our annual import of eggs from France, has, of late years, been very considerable. A few years since, the following successful experiment for their preservation was made at Paris. A large number of eggs was placed in a vessel, in which was some water saturated with lime and a little salt. They were kept in that state several years, and being opened in the month of January, were found in excellent preservation without a single failure.

For the following process, for preserving eggs perfectly sound, a patent was granted to a Mr Jayne, of Yorkshire, in England.

Put into a tub or vessel one bushel of quick lime, thirty-two ounces of salt, eight ounces of cream of tartar, and mix the same together with as much water as will reduce the composition to that consistence that it will cause an egg put into it to swim with its top just above the liquid; then put and keep the eggs therein, which will preserve them perfectly sound for the space of two years at least.

Feathers or down intended for use, should be plucked as soon as possible after the bird is dead, and before it is cold, otherwise they are defective in that elasticity which is their most valuable property, and are liable to decay. The bird should, beside, be in good health, and not moulting, for the feathers to be in perfection: and being plucked, and a sufficient number collected, the sooner they are dried in the oven, the better, since they are else apt to heat and stick together.

SECTION VIII;

On feeding and fattening Chickens and Fowls.

The points for consideration on this branch of the subject are — the local CONVENIENCES, the modes, common or extraordinary, the variety and quality of the FOOD, and the length of TIME necessary for completion of the object.

The well-known common methods are, to give fowls the run of the farm-yard, where they thrive upon the offals of the stable, and other refuse, with perhaps some small regular daily feeds ; but at thrashing time, they become fat, and are thence styled BARN-DOOR FOWLS, probably the most delicate and high-flavoured of all others, both from their full allowance of the finest corn, and the constant health in which they are kept, by living in the natural state, and having the full enjoyment of air and exercise; or they are confined during a certain number of weeks, in coops, those fowls which are soonest ready, being drawn as wanted. It is a common practice with some housewives, to coop their barn-door fowls for a week or two, under the notion of improving them for the table and increasing their fat ; a practice which, however, seldom succeeds, since the fowls generally pine for their loss of liberty, and, slighting their food, lose instead of gaining additional flesh. Such a period, in fact, is too short for them to become accustomed to confinement.

Feeding-houses, at once warm and airy, with earth floors, such as have been already described, well raised, and capacious enough to accommodate twenty or thirty fowls, have always succeeded best, according to my experience. The floor may be slightly littered down, the litter often changed, and the greatest cleanliness should be observed. Sandy gravel should be placed in several different layers, and often changed. A sufficient number of troughs, for both water and food, should be placed around, that the stock may feed with as little interruption as possible from each other, and perches in the same proportion should be furnished for those birds which are inclined to perch, which few of them will desire, after they have begun to fatten, but which helps to keep them easy and contented until that period. In this mode fowls may be fattened to the highest pitch, and yet preserved in a healthy state, their flesh being equal in quality to that of the barn-door fowl. I am aware that to suffer fattening fowls to perch, is contrary to the general practice, since it is supposed to bend and deform the breast-bone; but as soon as they become heavy and indolent from feeding, they will rather incline to rest in the straw; and the liberty of perching on the commencement of their cooping, has a tendency to accelerate the period when they are more inclined to rest on the floor. Fowls, moreover, of considerable growth, will have many of them become already crooked breasted from perching whilst at large, although much depends upon form in this case, since we find aged cocks and hens of the best shape, which have perched all their lives with the breast-bone perfectly straight.

It has always been a favourite maxim among feeders, that THE PRIVATION OF LIGHT, by inclining fowls to a constant state of repose, excepting when moved by the appetite for food, promotes and accelerates obesity. It may probably be so, although not promotive of health; but as it is no question, that a state of obesity obtained in this way, cannot be a state of health, a real question arises—whether the flesh of animals so fed, can equal in flavour, nutriment, and salubrity, that of the same species fed in a more natural way? Pecuniary and market interest may perhaps be best answered by the plan of darkness and close confinement, but a feeder for his own table, of delicate taste, and ambitious of furnishing his board with the choicest and most salubrious viands, will declare for the natural mode of feeding; and in that view, A FEEDING-YARD, gravelled and sown with the grasses already described, the room being open all day, for the fowls to retire at pleasure, will have a decided preference, as the nearest approach to the barn-door system.

INSECTS and ANIMAL food, also, form a part of the natural diet of poultry, are medicinal to them in a weakly state, and the want of such food may sometimes impede their thriving.

SIZED fowls have been intended thus far; but the above feeding-rooms are well calculated for fattening the younger chickens, which may be put up as soon as the hen shall have quitted her charge, and so to speak, before they have run off their sucking flesh. For generally, when well kept and in health, they will be in fine condition and full of flesh, at that period, which flesh is afterwards expended in the exercise of foraging for food, and in the increase of stature, and it may be a work of some time afterwards to recover it, and more especially in young cocks, and all those which stand high upon the leg. In fact, all those that appear to have long legs, should be fattened from the hen, to make the best of them; it being extremely difficult, and often impossible, to fatten long-legged fowls in coops, which, however, are brought to a good weight at the barn-door.

In the choice of FULL-SIZED fowls for feeding, the short-legged and early-hatched always deserve a preference. The green linnet is an excellent model of form for the domestic fowl, and the true Dorking breed approaches the nearest to such model. In course, the smaller breeds and the game, are the most delicate and soonest ripe. The London chicken butchers, as they are termed, or poulterers, are said to be of all others the most dexterous and expeditious feeders, putting up a coop of fowls and making them thoroughly fat within the space of a fortnight; using much grease, and that perhaps not of the most delicate kind, in the food. In this way, I have no boasts to make, having always found it necessary to allow a considerable number of weeks for the purpose of making fowls fat in coops. In the common way, this business is often badly managed, fowls being huddled together in a small coop, tearing each other to pieces, instead of enjoying that repose which alone can ensure the wished for object; irregularly fed and cleaned, until they are so *stenched* and poisoned in their own excrement, that their flesh actually smells and tastes of it when smoking upon the table.

All practical and practicable plans have their peculiar advantages; among others, that of leaving poultry to FORAGE AND SHIFT FOR THEMSELVES; but where a steady and regular profit is required from them, the best method, whether for domestic use or sale, is CONSTANT HIGH KEEP from the beginning, whence they will not only be always ready for the table with very little extra attention, but their flesh will be superior in juiciness and rich flavour, to those which are fattened from a low and emaciated state. Fed in this mode, the SPRING PULLETS are particularly fine, at the same time most nourishing and restorative food. The pullets which have been hatched in March, if high fed from the nest, will lay plentifully through the following autumn, and not being intended for breeding stock, the advantage of their eggs may be taken, and themselves disposed of thoroughly fat for the table in February, about which period their laying will be finished.

Instead of giving ordinary and TAIL-CORN to my fattening and breeding poultry, I have always found it most advantageous to allow the heaviest and best, putting the confined fowls upon a level with those fed at the barn-door, where they have their share of the weightiest and finest corn. This high feeding shows itself not only in the size and flesh of the fowls, but in the size, weight, and substantial goodness of their eggs, which in those valuable particulars, will prove far superior to the eggs of fowls fed upon ordinary corn or washy potatoes ; two eggs of the former going farther in domestic use, than three of the latter. The water also given to fattening fowls should be often renewed, fresh and clean; indeed, those which have been well kept, will turn with disgust from ordinary food and foul water.

EGGS. December 7, half-breed Poland hen matched with the cock: began to lay on the 28th. On March 1, 1806, she had laid 56 eggs, and afterwards sat over 12 eggs. After incubation had commenced she laid two eggs, making the total 58, which two were withdrawn. Her eggs unbroken weighed from one ounce three quarters to two ounces each, amounting, at one and three quarters each, to nearly seven pounds avoirdupois. I had, from motives of curiosity, deducted the weight of the shells, but the memorandum is lost. The eggs of another hen, in poor condition, and ill fed, were small, light, and the yolk unsubstantial; the same hen, after good feeding, laid plenty of eggs of larger size, and nearly double the weight. The largest eggs will weigh two ounces and a half, those of the Chittagong hen, perhaps, three ounces.

To promote FECUNDITY and great laying in the hen, nothing more is necessary than the best grain and fair water; but malted or sprouted barley, has occasionally a good effect, whilst the hens are kept on solid corn; but if continued too long, they are apt to scour. Cordial horse-ball is good to promote laying in the cold season, and toast and ale, as every housewife well knows.

It must be noted, that nothing is more necessary towards success in the particular of obtaining plenty of eggs, than a good attendance of cocks, especially in the cold season; and it is also especially to be observed, that a cock whilst moulting is generally useless.

My practice is, to withdraw a cock under that circumstance to a separate walk, and substitute another, which is known and familiar with the hens, since a stranger will not always be received, and such a circumstance will sometimes totally interrupt the business of the poultry-yard: these particulars respecting the cock require the more especial attention, since, according to the old poultry books, one cock was deemed sufficient for ten or even a dozen hens, whereas in winter time, a cock to every four hens may be necessary. Buffon says, a hen well fed and attended will produce upwards of one hundred and fifty eggs in a year, besides two broods of chickens. I have observed, that a hen generally CACKLES three or four days previously to laying. Some half-breed game hens began to lay as soon as their chickens were three weeks old; the consequence of high keep and good attendance of the cocks.

It is stated in Deane's *New England Farmer* that hens which do not lay in the winter should have access to slacked lime, pounded bones, or oyster shells, as something of the kind is necessary to form their shells, which are composed of the phosphate of lime. When corn is given to fowls, it should be cracked and soaked in water. A New York paper recommends to fatten fowls in summer by shutting them up in some cool place, and feeding them on sour coagulated milk, with a little meal or corn two or three times a week.

Cobbett's Cottage Economy observes that Pullets, that is, birds hatched in the foregoing spring, are the best laying hens in winter. ' At any rate let them not be more than *two years old.* They should be kept in a warm place; and not let out even in the day time in wet weather; for one good sound wetting will keep them back for a fortnight. The dry cold, even the severest cold, if *dry*, is less injurious than even a little *wet*, in winter time. If the feathers get wet, in our climate, in winter, or in short days, they do not get dry for a long time; and this it is that spoils and kills many of our fowls.

' The French, who are great egg-eaters, take great pains as to the food of laying hens, in winter. They let them out very little, even in their fine climate, and give them very stimulating food: barley boiled and given them warm; curds — *buck-wheat* (which I believe is the best thing of all except curds); parsley and other herbs chopped fine; leeks chopped in the same way; also apples and pears chopped very fine; oats and wheat sifted; and sometimes they give them hemp-seed, and the seed of nettles; or dried nettles, harvested in summer, and boiled in the winter. Some give them ordinary food, and once a day toasted bread sopped in wine. White cabbages, chopped up, are very good for all sorts of poultry.'

A writer for the American Farmer gives the following method of fattening fowls, which, he says, was communicated to him by a farmer from Buck's County, Tenn. — ' Confine your fowls in a large airy inclosure, and feed them on broken [or cracked] Indian corn. Indian meal or mush, with raw potatoes cut into small pieces, not larger than a filbert; placing within their reach a quantity of charcoal broken into small pieces, which, he says, they will greedily eat and thereby promote a rapid digestion of their food. By this method, he assures me they will fatten in one half the usual time, and with much less expense.'

A proportion of animal food, mixed with vegetable food, is said to cause poultry to thrive much faster than they would otherwise. A writer in the European Magazine, who signs G. C. Jenners, states the advantage of allowing poultry 'a small orchard to range in, where, in the course of the day they occasionally picked up worms and other insects; and I have observed that poultry, of all kinds, eagerly seek for animal food, even after they have satiated themselves with grain: indeed, I consider a portion of animal food essentially requisite to preserve them in a healthy state.

Mr Lawrence, an English writer, says: 'Hens set twenty-one days. Leave plenty of nest eggs where you desire them to set. Take away the strongest chickens as fast as they are hatched, secure them in wool until the whole are hatched, and strong enough to be cooped.'

It is said that a little molasses, or any other saccharine substance, is very useful to mix with the food of poultry, which it is intended to fatten. Perhaps it may be well to boil a proportion of beets, carrots, or parsnips, sweet apples, ripe and sweet pumpkins or squashes, with potatoes, for the food of poultry. Wheat, if given to fowls, it is said, will furnish the substance, (phosphate of lime) which is the principal constituent part of egg shells. Indian meal and boiled potatoes has been found by experiment to make good food for poultry. An anonymous writer says, 'the food of chickens, and more especially ducks and turkeys, should be Indian meal ground coarse, and mixed with *sour* milk.'

QUANTITIES OF FOOD. By an experiment

made in July, 1806, a measured peck of good barley kept in a high style of condition, the following stock, confined, and having no other provision: one cock, three hens, three March chickens, six April, and six May ditto, during eight clear days, and one feed left. According to another trial, in the winter season, a cock and two hens kept by themselves seven clear days, consumed a quarter of a peck of the best barley, having no other food, having as much as they chose to eat. The same being tried at their liberty, and pecking about, with cabbage leaves occasionally thrown to them, did not eat so much barley in the week, although allowed all they desired. They were in a perfect thriving state, but it must be remembered that light and ordinary corn would not have gone so far, or have kept the fowls in such condition.

Poultry which have their fill of corn, will eat occasionally, cabbage or mangel wurtzel leaves greedily. Barley and wheat are the great dependence for chicken poultry. The heaviest oats will keep them, it is true, but neither go so far as other corn, nor agree so well with the chickens, being apt to scour them, and the chickens generally are tired of oats after a while. Brank or buck wheat, is also an unsubstantial food. Oats, however, are recommended to forward and promote laying in hens; and in Kent, Sussex, and Surrey, are deemed superior for fattening both poultry and pigs.

SUN-FLOWER seed has been periodically recommended with high commendations, as food for poultry, game, sheep and pigs, but never yet attended to by the generality of feeders. I have used it occasionally in small quantities, but without any attention to its merits. The experiment may easily be made.

THE CAPON. I have already acknowledged my inferiority in the affair of quickly feeding poultry in close coops, and have a similar acknowledgment to make respecting capons, never having had any success in cutting either fowls or rabbits for such purposes, nor in truth, much affecting the practice. Loudon says that the making of capons is a barbarous practice, and had better be omitted.

The Sussex men making the highest pretensions as poultry-feeders, I shall give them the precedence in quotation. In the Report for that county, the Rev. Arthur Young says, 'North Chappel, Kinsford, &c, are famous for their fowls. They are fattened there to a size and perfection unknown elsewhere. The food given them is ground oats made into gruel, mixed with hog's grease, sugar, pot-liquor, and milk: or ground oats, treacle, and suet, sheep's plucks, &c. The fowls are kept very warm, and crammed morning and night. The pot-liquor is mixed with a few handfuls of oatmeal and boiled, with which the meal is kneaded into crams or rolls of a proper size. The fowls are put into the coop, two or three days before they are crammed, which is continued for a fortnight, and they are then sold to the higglers. Those fowls, full grown, weigh seven pounds each, the average weight five pounds, but there are instances of individuals double the weight.

The Workingham METHOD OF FEEDING is to confine the fowls in a dark place, and cram them with a paste made of barley-meal, mutton suet, treacle, or coarse sugar, and milk, and they are found completely ripe in a fortnight. If kept longer, the fever that is induced by this continued state of repletion, renders them red and unsaleable, and frequently kills them. I must presume to repeat, it appears to me utterly contrary to reason, that fowls fed upon such greasy and impure mixtures can possibly produce flesh or fat so firm, delicate, high flavoured, or nourishing, as those fattened upon more simple and substantial food; as for example, meal and milk, and I think lightly of the addition of either treacle or sugar. With respect to grease of any kind, its chief effect must be to render the flesh loose and of indelicate flavour. Nor is any advantage gained, excluding the commercial one, as I confine myself entirely to the consideration of home use, by very quick feeding: for real excellence cannot be obtained but by waiting nature's time, and using the best food. Besides all this, I have been very unsuccessful in my few attempts to fatten fowls by cramming — they seem to loathe the crams, to pine, and to lose the flesh they were put up with, instead of acquiring fat; and where crammed fowls do succeed, they must necessarily, in the height of their fat, be in a state of disease.

SECTION IX.

On the Diseases of Poultry and Pigeons.

The diseases of our domestic animals kept for food, are generally the result of some error in diet or management, and should either have been prevented, or are to be cured most readily and advantageously by an immediate change, and adoption of the proper regimen. When that will not succeed, any farther risk is extremely questionable; and particularly with respect to poultry, little hope can be derived from medical attempts. In fact, the far greater part of that grave and plausible account of diseases and remedies, which is to be found in our common cattle and poultry books, is a farrago of sheer absurdity; the chief ground of which, it is to be apprehended, is random and ignorant guess-work.

Common Fowls. — Of these, the most frequent diseases, real or presumed, are thus named: the pip, a white skin or scale growing upon the tip of the tongue. The cure, — tear off the skin with your nail, and rub the tongue with salt. Of this I know nothing, and could never hear any thing with certainty. Imposthume upon the rump is called *roup*. This is directed to be opened, the core thrust out, and the part washed with salt and water. The roup also seems a general term for all diseases, but is chiefly applied to CATARRH, to which gallinaceous fowls are much subject. The FLUX, and its opposite, CONSTIPATION. Cure the first with good solid food; the other with scalded bran or pollard, mixed with flet or skimmed milk, or pot-liquor, a small quantity of sulphur being added, if needful. VERMIN, generally the consequence of low keep, and want of cleanliness. The remedy obvious; not to forget sand and ashes for the fowls to roll in.

But the chief disease to which chickens and fowls are liable, originates in changes of weather, and the variation of temperature; and when the malady becomes confirmed, with running at the nostrils, swollen eyes, and other well-known symptoms, they are termed ROUPY. The discharge becoming fetid, like the glanders in horses, the disease is supposed to have arrived at the stage of infection; and whether so or not, it is certainly proper for cleanliness sake, to SEPARATE the diseased from the healthy, whence the necessity of an INFIRMARY in a regular poultry establishment. Roupy hens seldom lay, and their eggs are scarcely wholesome. The eggs taken from a hen which died of the roup, were black, and in a state of putrefaction.

Chickens are frequently, and chiefly in bad weather, seized with the CHIP, in about three weeks from their hatching, when all their beauty of plumage vanishes, and they put on their long great coat, or rather shroud, and sit *chipping*, pining, and dying in corners; always apparently in torture, from a sense of cold, although to the touch they seem in a high state of fever. This disease seldom admits of remedy; but I have tried mustard in water, crams, with a small quantity of black pepper, and afterwards nitre, given in the water. The sun, or warmth in the house, by the fire-side, are the best remedies. The fire is a great restorative of all young, indeed of all animals.

For grown fowls affected by the roup, warm lodging is necessary, and even the indulgence of the fire, or the warmth of the bakehouse. Wash the nostrils with warm soap and water, as often as necessary, and the swollen eyes with warm milk and water. A pepper-corn in a pill of dough, three following days, is an old and favourite remedy, the patient being much chilled. Afterwards bathe the swollen parts with camphorated spirit, or brandy and warm water. As a finish to the cure, give sulphur in the drink, or a small pinch of calomel in dough, three times in a week. The fowls being weak and not feeding well, the old remedy of rue chopped and made into pills with fresh butter, may be substituted for calomel; though I must acknowledge I could never find any perceptible effects from the rue pill.

The common symptom of GAPING, during this influenzal disease, induced the learned, a few years past, to coin a new disease under the name of the GAPES, which they conveniently attributed to a species of *fasciola*, or stricture, infecting the *trachea*, or wind-pipe, of poultry. Pheasants and partridges, in their wild state, are also liable to the gapes, and from the same atmospheric cause. This symptom was observed very prevalent among them during the very variable summer, 1821.

A writer for the American Farmer directs in order to prevent fowls from being attacked with gapes, to 'take a piece of assafoetida about the size of a hen's egg, beat it tolerably flat, and wrap a piece of cotton cloth round it, and nail it to the bottom of the trough where the hens are daily watered;' this method is adopted in the spring of the year, when the hens begin to bring forth their young broods, and it will be attended with invariable success in preventing that destructive disorder.'

Another remedy for this disease from the same paper, is as follows: Take as much kitchen soap as will cover the thumb nail, and having mixed it up with some meal dough, give it to your chickens at any stage of the disease. This has been found effectual on the first application almost always; a second rarely necessary, and when it is so, it is next to impossible that it should fail.

The head being raw, and the eyes blinded from fighting, wash the eyes as before directed, and the head, which, after washing, may be alternately, according to need, dressed with fresh butter, and with brandy, in which has been infused two or three drops of laudanum. A hen sate about in corners, and neither ate, drank, nor evacuated, yet looked full and not diseased. Her CROP was totally obstructed. On an incision being made from the bottom upwards, a quantity of new beans was found, which had vegetated. The wound being stitched properly, immediately healed, and the hen suffered little inconvenience. A cock's SPURS being too long, impeding his walk, and wounding his legs, they should be cut carefully with a sharp pen-knife, but not too near the quick, every three months.

PIGEONS, also, are subject to the ROUP, understanding by that term, a cold, or catarrh, the symptoms of which are too visible in the miserable creatures exposed to sale hung up in baskets, in all weathers and currents of air. Garlic in pills, and rue given in water, are the general remedies. Sheltered places, with room for exercise, and warm seeds, or cordial horse-ball in their food, form the best dependence. They are in course most liable at MOULTING TIME, a season at which all kinds of poultry should be carefully sheltered and attended.

WOUNDS upon the head, or the WATTLES of Carriers and Barbs, to be treated as already directed for chickens; but if the parts should CANKER, as it is styled, wash with stale urine, or alum and water, or any spirit and water; or make an unguent of burnt alum and honey; or mix twenty grains of red precipitate with half an ounce of honey; or dissolve five grains of white vitriol in half a table-spoonful of vinegar, and mix with the above, alum and honey. Pigeons are liable to several peculiar internal complaints of weakness, for which it is probable that prevention, or subsequent care, are the only remedies. A variety of remedies are offered for vermin in pigeons, such as stavesacre, tobacco, snuff, and similar articles, but the only effectual one is strict CLEANLINESS.

Croppers, particularly, are apt to GORGE themselves, and all young pigeons are occasionally subject to have the crop obstructed by receiving too great a quantity of food, and too speedily, for digestion. The first, or old pigeons in this state, may be treated as already directed for fowls. The crops of the squabs being gently stroked upwards with the fingers, will generally be cleared a bean a time; should this method fail, which will seldom happen, the usual incision may be made. The VERTIGO, MEGRIM, or GIDDINESS in pigeons, arises probably from some error of diet or keeping, and I know of no remedy, but confinement, with room for exercise, fine water being allowed, with chalk and saffron infused. For SCOURING, forge-water, or rust of iron in pellets of dough; afterwards, sulphur in the water. In ERUPTIONS, sulphurated water. If any external application be necessary, the unguents already directed will be proper. For wounds in the FEET, Venice turpentine spread on brown paper. The FLESH WEN, may be either opened, or cut off, the part being washed with alum water, &c, or the dressings used as before directed. EXOSTOSIS or the BONE WEN upon the joints, somewhat similar to splents upon the shank of the horse, is deemed incurable. The best cure, to fatten for the table. The CORE, a hard substance of a yellowish colour, mixed with red, and resembling the core of an apple, is sometimes found in the anus or vent, and has been known in the œsophagus, or gullet of a pigeon. This will ripen and maturate, and may be then discharged, dissected, or drawn out. A purge of a very small quantity of tobacco is directed in this case, but on what grounds I am not informed.

In keeping poultry of all kinds, it ought to be a first consideration that there be sufficient ROOM and AIR for the number kept; otherwise, they will be, in the vulgar phrase, *stenched*, that is, infected by the impurity of their own atmosphere, and become, in consequence, subject to frequent mortality.

'Many a hen when sitting, is compelled to quit her nest to get rid of the lice. They torment the young chickens, and are a great injury. The fowl house should therefore be very often cleared out, and sand or fresh earth should be thrown on the floor. The nests should not be on *shelves*, or on any thing fixed; but little flat baskets should be placed against the sides of the house upon pieces of wood, nailed up for the purpose. By this means the nests are kept perfectly clean, because the baskets are when necessary taken down, the hay thrown out and the basket washed, which cannot be done if the nest be made in any thing forming a part of the building. Besides this the roosts ought to be cleared every week, and the hay changed in the nests of the laying hens. It is good to fumigate the house frequently by burning dry herbs, juniper wood, cedar wood, or with brimstone; for nothing stands so much in need of cleanliness as a fowl house, in order to have fine fowls and a plenty of eggs.'

Cobbett.

SECTION X.

The Turkey.

THIS bird, of such worth and consequence for domestic use, was most probably introduced into this country from Spain, soon after the discovery of America; since Tusser, who lived in the reign of Henry VII, represents it as a common Christmas dish, together with pig, goose, and capon. The turkey did not reach France quite so early; the first intelligence we have of it in that country, being at the nuptial feast of Charles IXth, in the year 1570. They have since been domesticated throughout the civilized world, in every climate, although said not to succeed equally on the barren sands of Africa.

There is a sameness of colour in the wild turkey, and the original stock seems to have been black, domestication generally inducing a variety of colours. Yet one would suppose that white also must have been a primitive colour with them, else the transition from black to white would be rather unaccountable. In a state of nature, they are said to parade in flocks of five hundred, and even five thousand, feeding, in general, where abundance of nettles are to be found, the seed of which is their common food: they also feed upon a small red acorn, which, in the warm and fertile parts of America, is ripe in March, when the turkeys become so fat as to be unable to fly more than a few hundred yards, and are then soon run down by dogs and horsemen. They roost upon the highest trees, and are very easily shot or otherwise destroyed, being a heedless and stupid bird. Since the planting and cultivation of such extensive tracts in America, the wild breed of turkeys has been driven into the uncultivated regions, and has long since become very rare. The Indians make elegant clothing and beautiful fans of wild-turkey feathers, and the French of Louisiana manufacture them into umbrellas.

SECTION XI.

The Turkey. — Breeding and Management.

One Turkey-cock is sufficient for six hens, and even more, under the management of some districts, where one breeder keeps a cock for his own, and for the use of his neighbours, who send their hens, and in that mode avoid the charge of keeping a cock; but this practice is exposed to uncertainty, and is scarcely worth following, although, whilst the hen is sitting, the absence of a cock is no loss, as he will sometimes find the opportunity of tearing the hen from her nest, and in the struggle, of destroying the eggs.

The hen will cover, according to her size, from nine to fifteen eggs, and unless attended to, will, perhaps, steal a nest abroad in some improper and insecure place. The turkey hen lays a considerable number of eggs in the spring, to the amount of eighteen to twenty-five and upwards, and her term of incubation is thirty days. She is a most steady sitter, and will sometimes continue upon her eggs until almost starved, rather than quit her nest: hence the necessity of constant attendance with both victuals and water. She is also a most affectionate mother; and that most curious and accurate observer, Buffon, remarks her soft and plaintive cry, with her different tones and inflections of voice, expressive of her various feelings.

The above remarks, however, of Buffon, are to be received with a due degree of circumspection, since I have known unsteady sitters among turkeys, and however affectionate, the turkey hen, from her natural heedlessness and stupidity, is the most careless of mothers, and being a great traveller herself, will drag her brood over field, heath, or bog, never casting a regard behind her to call in her straggling chicks, nor stopping whilst she has one left to follow her. She differs beside, in this particular, from the industrious common hen; she never scratches for her chicks, leaving them entirely to their own instinct and their own industry. On these accounts, where turkeys are bred to any extent, and are permitted to range, it is necessary to allow them a KEEPER. The turkey hen is nevertheless extremely vigilant and quick in the discovery of any birds of prey in the air, which may endanger her brood, and has the faculty, by a peculiar cry, of communicating her alarm, on which the chicks immediately seek shelter, or squat themselves upon the earth: but she will not, from her timid nature, fight for her brood as the common hen will. The domesticated, as well as the wild turkey, runs with considerable speed.

The CHICKS must be withdrawn from the nest as soon as hatched, and kept very warm. It is a very old and very general custom, to plunge them instantly into cold water, and then give them each a whole pepper-corn, with a small teaspoonful of milk. This baptism is used by way of a prophylactic against catching cold, to which young chicks are so peculiarly liable; but it is a practice which I have never used, and from which, in severe weather, I should suspect danger; however, their being instantly thereafter wrapped in wool or flannel may secure them. The turkey, from sitting so close and steadily, hatches more regularly and quickly than the common hen.

The hen and brood must be HOUSED during a month or six weeks, dependent upon the state of the weather. First FOOD, curd or eggs boiled hard and chopped, and oat or barley-meal kneaded with milk, and frequently renewed with clear water, rather than milk, which often scours them. In case of the chicks appearing sickly and the feathers ruffled, indicating a chill from severity or change of weather, we generally allowed half ground malt with the barley-meal, and by way of a medicine, powdered caraway or coriander seeds. Also ARTIFICIAL WORMS, or boiled meat pulled into strings, in running after which the chicks have a salutary exercise. It is to be noted, that the above diet is beneficial for every other species of chicks, equally with the turkey.

Superfluous moisture, whether external or internal, is death to chickens, therefore all slop victuals should be rigorously avoided. The utmost CLEANLINESS is necessary, and a dry GRAVELLED layer is most proper. A fresh TURF of short sweet grass daily, cleared from snails or slugs, which will scour young chicks, is very pleasing and comfortable to them, and promotes their health. The above substantial food was always our chief dependence with this brood, nor did we ever find it necessary to waste time in collecting ants' eggs or nettle seed, or give clover, rue, or wormwood, according to the directions of the elder house-wives. Eggs boiled hard are equally proper with curd, and generally nearer at hand; the eggs being rotten, is said to be no objection, although we never used such.

Our first preference of water to milk for turkey chicks, so much recommended by the old writers, arose from the observation that chickens at large, among the troughs of milk-fed pigs, generally were sickly and scouring, and rough in their feathers; and more particularly so when they had access to potatoe-wash, which not only purged them, but glued their feathers together, keeping them in a comfortless and unhealthy state.

The weather being remarkably favourable, we have usually cooped the hen abroad, about two hours in the forenoon, in a moderately warm sun, whilst the chicks were only three or four weeks old, great care being taken that they did not stray far from the coop. Six weeks is their longest period of confinement within doors, after which it is more safe to coop the hen for another fortnight, that the chicks may acquire strength abroad sufficient to enable them to follow the dam, they being naturally inclined to stray too far, and to weaken themselves by fatigue. When full half-grown and well feathered, they become sufficiently hardy, and in a good range will provide themselves throughout the day, requiring only to be fed at their out-letting in the morning, and on their return at evening: the same in spacious farm-yards; if confined to the poultry-yard their food and treatment is similar to that of the common cock and hen. Turkeys would prefer roosting abroad upon high trees, in the summer season, could that be permitted with a view to their safe keeping.

In the Sporting Magazine, August, 1824, there is a letter signed Rusticus, giving an excellent and obviously practical account of their breeding and management. From thence I have made the following extracts. 'At two periods of their lives turkeys are very apt to die; viz. about the third day after they are hatched, or when they throw out what is called the *red head*, which they do at about six or eight weeks old. At the latter period, a few old beans split small, may be mixed with advantage in their food.

'If any notion is entertained of a second hatch, the sooner one hen is turned away from her brood, and the brood mixed with that of another which has hatched about the same time, the better chance there is of rearing it; as the hen which is so turned away, will lay again in a fortnight or three weeks, and thus hatch a second time before the month of July is out. Even under these circumstances, the chance of rearing the young ones is very uncertain, as they are hardly strong enough to meet the cold nights in the autumn, when they often become what is called club-footed, and die. I rather recommend letting the hen lay as many eggs as she will, and turning her off when she becomes broody. Hens thus treated will lay again in the month of August, so that under all circumstances, they may be called profitable birds.'

I have observed that, 'turkeys are both of a roving disposition and extremely heedless. Getting into a field of corn, (grain) they will do nearly as much mischief as pigs, by beating it down, though they are so stupid and backward at getting even ripe corn out of the ear, leaving the whole through which they have passed laid, yet the greater part of the corn untouched. As to pulse, they will pass over a field of ripe peas or beans, without having the wit to open a single pod. Turkeys in the neighbourhood of large woods, if not watched and prevented, will eagerly stroll thither without any desire to return, since they can there shelter and maintain themselves in both winter and summer: they very soon reassume the original wildness of their species.

To FATTEN. Soddened barley, oat, or barley and wheat meal mixed, is the proper food for turkeys confined to feeding; generally, their food and treatment are the same with other fowls. They may be fattened early, or may be CAPONIZED, a practice not very common; but the bulk of the turkeys are fed for Christmas, or the months immediately preceding and subsequent, when the quantities fat sent from Norfolk alone, are immensely great; as also are previously the numbers of store turkeys. A mode of fattening turkeys, quite new to me, has been lately reported. It consists in cramming them with whole walnuts! I really supposed the intention of the reporters was to *cram* us, until a friend assured me, it is an old and successful practice!

Turkeys share with the geese in gleaning the corn fields, or shacking, and the former forage over the woods and commons, in the autumnal season, after which they are put up to be completely fattened. I have heard of the Norfolk turkeys fattened to weigh twenty, and even thirty pounds each; and Buffon relates that the wild turkey of America has been known to attain the weight of sixty pounds; but I have never made any heavier than fifteen pounds ready for the spit.

In December, 1822, two turkeys were bred and fed, and sent to Cork, one weighing thirty-three, the other thirty-four pounds, from Sawbridgeworth, Herts, the residence of Sir John Malcolm.

The turkey has ever been remarked for its fullness and weight of flesh in the breast, no doubt beside the prime part. The dead weight of a fat turkey being twenty-one pounds, according to the late Mr Young, renders fourteen pounds when ready for the spit.

Turkeys are the most tender and difficult to rear of any of our domestic fowls; but with due care and attention, which, rightly considered, in all things, give the least trouble, they may be produced and multiplied with little or no loss, and the same may be averred with all truth of the rest of our domestic fowls, and animals in general; the losses and vexations annually deplored, arising almost entirely from ignorance and carelessness united hand in hand. Turkeys as well as geese, under a judicious system, may be rendered an object of a certain degree of consequence to the farmer.

Mr Weston, an English writer of reputation, in a work entitled '*Tracts on Practical Agriculture and Gardening*,' has the following observations on fattening turkeys as well as other poultry:

'Boil some rice in water gently, till it be plumped up, and very tender; add about two ounces of very brown sugar to every pound of rice just before it is boiled enough; let the fowls be fed with it three times a day; in ten or twelve days they will be fat: but if they were in good condition when put up to fatten, they will be ready in seven or eight days; they must by no means have any water given them in summer; too much rice must not be boiled together, because of its soon turning sour; nor is milk so good for that reason as water only; besides the milk is very liable to make the rice burn to the pot.

'Frequently offal rice is to be bought very cheap of the grocers in the city. The rice causes the flesh to be remarkably white, and to have a fine delicate flavour.'

Cobbett's Cottage Economy contains the following remarks:

'The great enemy to young turkeys, (for old ones are hardy enough), is the wet. The first thing is to take care that young turkeys never go out on any account, even in dry weather, till the *dew is quite off the ground;* and this should be adhered to till they get to the size of an old partridge and have their backs well covered with feathers, and in wet weather they should be kept under cover all day long.

'As to feeding them when young, various nice things have been recommended. Hard eggs, chopped fine with crumbs of bread, and a great many other things; but that which I have seen tried, and always with success, and for all sorts of young poultry, is ***milk turned to curds.*** This is the food for young poultry of all sorts. Some should be made *fresh every day;* and if this be done, and the young turkeys kept warm, and especially *from wet,* not one of a score will die. When they get strong, they may have meal and grain, but still they always love the curds.

'When they get their head feathers they are hardy enough; and what they then want is room to prowl about. It is best to breed them under a ***common hen;*** because she does not ramble like a hen turkey; and it is a very curious thing that the turkeys bred up by a hen of the common fowl do not themselves ramble much when they get old; than which a more complete proof of the great power of *habit* is not, perhaps, to be found. And ought not this to be a lesson to fathers and mothers of families? Ought they not to consider that the habits which they give to children are to stick to them during their whole lives?

'The hen should be fed exceedingly well, too, while she is sitting and after she has hatched; for, though she does not give milk she gives heat; and let it be observed that, as no man ever yet saw healthy pigs with a poor sow, so no man ever saw healthy chickens with a poor hen. This is a matter much too little thought of in the rearing of poultry; but it is matter of the greatest consequence. Never let a poor hen sit; feed the hen while she is sitting; and feed her most abundantly when she has young ones; for then her labour is very great; she is making exertions of some sort or other during the whole twenty-four hours; she has no rest; constantly doing something or other to provide food or safety to her young ones.

'As to fatting turkeys, the best way is never to let them be poor. Cramming is a nasty thing and quite unnecessary. Barley meal, mixed with skim milk, and given to them fresh will make them fat in a short time. Boiled carrots and Swedish turnips will help and furnish a change of sweet food.'

SECTION XII.

THE AQUATIC SPECIES.

The Duck.

The Goose and Duck genus is said by naturalists to comprehend upwards of one hundred species, varying considerably in size and plumage from each other; comparatively few of them have been domesticated, but the date of that domestication is far beyond all memorial or record.

This genus of fowls was deservedly a great favourite with the ancients, from the mildness and simplicity of their character, from their great fecundity, and from the cheapness and ease with which they were provided. Although the duck will eat flesh and garbage of any kind like the chicken, yet water insects, weeds, vegetables, corn, and pulse, are its general food, and, as has been already observed, the goose desires nothing but the latter. The inoffensive and harmless character is common to both species, rendering them most pleasant as well as profitable animals to keep, and the contrast between them and the chickens, in their nature and habits, is highly in favour of the goose and duck tribe. In fact, nothing can be more savage, cruel, and voracious than the very nature of the common fowl, on which domestication and society work no softening effect. Nor is this confined to the game breed, for chickens of all kinds will tear to pieces, on the slightest occasions, their nearest akin, devouring their living flesh and entrails. That which is said of the duck, has full as much truth, when applied to the chicken; there is nothing too nasty, putrid, and abominable to human feelings for them, upon which eagerly to gratify their voracious appetites.

Of the kind and social nature of the duck, I had a few years since the following example.

We had drawn off for the table, the whole of a lot of ducks, one excepted. This duck immediately joined a cock and hens, and became so attached to them, that it never willingly quitted their company, notwithstanding some harsh usage, particularly from the cock. It would neither feed nor rest without them, and showed its uneasiness at their occasional absence by continual clamour. The manners and actions of the duck, whether upon land or water, are curious and pleasant to contemplate. Their regular afternoon parade and march in line, the elder drakes and ducks in front, from the pond homewards, is a beautiful country spectacle, to be enjoyed by those who have a relish for the charms of simple nature. It is as long since as the year 1767, that I recollect the following trait in the character and manner of the duck. A parcel of ducks, probably a score, which had been accustomed to their liberty, were, for some particular reason, shut up during several hours. On the door of the coop being opened, they rushed out, threw themselves into a single rank and file, and marched with rather a quick step, three or four times around a certain space, constantly bowing their heads to the ground, then elevating them and fluttering their wings: the ceremony finished, they quickly adjourned to the water. I have laughed a thousand times at the conceit, with which my boyish imagination was impressed, namely, that the act which I had witnessed, was nothing less than a duckish thanksgiving for deliverance.

It is a curious illustration of the *de gustibus non est disputandum*, that the ancients considered the swan as a high delicacy, and abstained from the flesh of the goose as impure and indigestible; whilst the moderns reject the flesh of the swan, and eat that of the goose with a universal relish. But upon the excellence of the duck both parties seem to have agreed, as upon some self-evident, and thence incontrovertible proposition. The ancients went even beyond our greatest modern epicures, in their high esteem for the flesh of the duck, not only assigning thereto the most exquisite flavour and delicacy, but also attributing to it important medicinal properties; for Plutarch asserts that Cato preserved his whole household in health, by dieting them with duck's flesh as a prophylactic; surely a most pleasant mode of taking physic!

Breeding. One drake is generally put to five ducks; the duck will cover from 11 to 15 eggs, and her term of sitting is thirty days. Ducks begin to lay in February, in Great Britain; [generally as late as the middle of March, in the Middle and Northern parts of the U. S.]; are very prolific, and are apt, like the turkey, to lay abroad, and conceal their eggs, by covering them with leaves or straws.

The duck generally lays by night, or early in the morning; white and light coloured ducks produce similar eggs, and the brown and dark coloured ducks those of a greenish blue colour, and of the largest size. In setting ducks it is considered safest to put light coloured eggs under light ducks, and the contrary, as there are instances of the duck's turning out with her bill those eggs, which were not of her natural colour.

During incubation the duck requires a secret and a safe place, rather than any attendance, and will at nature's call, cover her eggs, and seek her food, and the refreshment of the waters. On hatching there is not often any necessity for taking away the brood, barring accidents; and having hatched, let the duck retain her young upon the nest her own time. On her moving with her brood, prepare a coop upon the short grass, if the weather be fine, or under shelter, if otherwise; a wide and flat dish of water, often to be renewed, standing at hand, barley or any meal the first food. In rainy weather, particularly, it is useful to clip the tails of the ducklings and the surrounding down beneath, since they are else apt to draggle and weaken themselves. Each duck should be cooped at a distance from any other. The period of her confinement to the coop depends on the weather, and the strength of the ducklings. A fortnight seems the longest time necessary; and they may be sometimes permitted to enjoy the pond at the end of a week, but not for too long a time at once, least of all in cold, wet weather, which will affect and cause them to appear rough and draggled. In such case they must be kept within awhile, and have an allowance of pea or bean meal mixed with their ordinary food. The straw beneath the duck should be often renewed, that the brood may have a dry and comfortable bed; and the mother herself be well fed with solid grain, without an allowance of which, ducks are not to be reared or kept in perfection, although they gather so much abroad.

Ducks' eggs are often hatched by hens, when ducks are more in request than chickens; also as ducks in unfavourable situations, are the more easy to rear, being more hardy; and the plan has no objection even in a confined place, and with a small stock without the advantage of a pond; but the hen is much distressed as is sufficiently visible, and in fact, injured, by the anxiety she suffers in witnessing the supposed perils of her children venturing on the water.

Ducks are fattened, either in confinement, with plenty of food and water, or restricted to a pond, with access to as much solid food as they will eat; which last method is preferable. They fatten speedily in this mode, mixing their hard meat with such variety abroad as is natural to them, more particularly if already in good case; and there is no check nor impediment to them from pining, but every mouthful tells, and weighs its due weight. A dish of mixed food is preferable to clear grain, and may remain on the bank, or rather in a shed for the ducks. Barley, in any form should never be used to fatten ducks or geese, since it renders their flesh loose, woolly and insipid, and deprives it of that high savoury flavour of brown meat, which is its valuable distinction; in a word rendering it chickeny, not unlike in flavour the flesh of ordinary and yellow legged fowls. Oats, whole or bruised are the standard fattening material for ducks and geese, to which may be added pea meal, as it may be required. The house wash is profitable to mix up their food under confinement; but it is obvious that while they have the benefit of what the pond affords, they can be in no want of loose food. Acorns in season, are much affected by ducks, which have a range; and they will thrive so much on that provision, that the quantity of fat will be inconvenient, both in cooking and on the table. Ducks, so fed, are certainly inferior in delicacy; but the flesh eats high, and is far from disagreeable. Fed on butcher's offal, the flesh resembles wild fowl in flavour, with however considerable inferiority. Offal fed ducks' flesh does not emit that abominable stench which issues from offal fed pork. When live ducks are plucked, only a small quantity of down and feathers are taken from each wing.

In Cobbett's *Cottage Economy*, it is observed, 'No water to *swim* in is necessary to the old ducks, and is *injurious* to the very young. They never should be suffered to swim (if water be near) till *more than a month old.* The old duck will lay in the year, if *well kept*, ten dozen eggs, and that is her best employment; for common hens are the best mothers.

'It is not good to let young ducks out in the morning to eat *slugs* and *worms*; for though they like them, these things kill them if they eat a great quantity. Grass, corn, white cabbages and lettuces, and especially buck wheat, cut up when half ripe, and flung down in the haulm make fine ducks. They will feed on garbage and all sorts of filthy things; but their flesh is strong and bad in proportion.

'Ducks,' says Nicol, a Scotch writer on Horticulture, 'are excellent vermin-pickers whether of caterpillars, (such as are within their reach, slugs, snails, and others,) and ought to be turned into the garden one or two days every week throughout the season. Never keep them longer in than two or three days at a time, or else they tire of their food, and become indolent. While here they should be offered no food; but may have a little water set down to them, if there be no pond or stream in the garden.

'They are very fond of ripe strawberries or gooseberries; and while they can get at these will not seek after little snails, or other insects; but they are most useful before these come into season for them. There are some kinds of vegetables they have a liking to, and on which they will fall if vermin be any wise scarce; therefore when this is perceived they should be turned out. Never turn them into the garden in the time of heavy rains, or in continued wet weather; as in that case, and particularly if the soil is stiff, they patter and harden the surface, to the injury of small crops and rising seeds.'

The *White-back*, or *Canvass-back duck*, is much extolled for its delicious flesh. It breeds in the north and north-west regions of the United States, but passes the winter in the south, and is chiefly confined to the Susquehannah and Potomac; where they feed on a particular kind of grass or water-plant, rarely, if ever, found in other streams. To this kind of food, it is said, their peculiar excellence for the table is owing.

The Goose.

This species of bird is divided into two varieties:

1. The *ferus*, Gray Lag, or Wild Goose, which inhabits the fens and lakes of the northern parts of America, Europe and Asia.

2. The mansuetus, or Tame Goose, or the Gray Lag in a state of domestication.

A new breed of geese called **Bremen Geese** has been introduced from Germany into the United States, which we are told is decidedly superior to any before known in this country. They were first imported by Mr James Sisson of Rhode Island, who received a premium from the Rhode Island Society for the Encouragement of Industry for the exhibition of this breed. They are said to possess the following advantages over any other animals of their kind: — They grow to a greater size, may be raised with more facility, are fattened with less grain, and make more delicious food.

The last Philadelphia edition of *Willich's Domestic Encyclopedia*, states that 'There is a valuable breed of this fowl in the southern states, from a mixture of the largest Gray Goose, with the wild Canadian Goose. They are much larger than any sort of tame geese, and in their cry and manners resemble the Canadian Goose.'

A writer in the *Monthly Magazine*, December, 1823, remarks humanely on the cruelty of plucking the living goose, proposing a remedy, which I should rejoice exceedingly to find practicable and effective. He remarks on the additional torture experienced by the poor fowl, from the two frequent unskilfulness and want of dexterity of the operator — generally a woman. The skin and flesh are sometimes so torn, as to occasion the death of the victim; and even when the fowls are plucked in the most careful manner, they lose their flesh and appetite; their eyes become dull, and they languish in a most pitiable state, during a longer or a shorter period. Mortality also has been periodically very extensive in the flocks of geese, from sudden and imprudent exposure of them to cold, after being stripped, and more especially during severe seasons and sudden atmospheric vicissitudes. There are many instances, in bleak and cold situations, of hundreds being lost in a single night, from neglect of the due precaution of comfortable shelter for as long a time as it may appear to be required. The remedy proposed, on the above authority, is as follows: — feathers are but of a year's growth, and in the moulting season they spontaneously fall off, and are supplied by a fresh fleece. When, therefore, the geese are in full feather, let the plumage be removed, close to the skin, by sharp scissors. The produce would not be much reduced in quantity, whilst the quality would be greatly improved, and an indemnification be experienced, in the uninjured health of the fowl, and the benefit obtained to the succeeding crop. Labour also would be saved in dressing, since the quilly portion of the feathers, when forcibly detached from the skin, is generally in such a state, as, after all, to require the employment of scissors. After this operation shall have been performed, the down from the breast may be removed by the same means.

The time has arrived, I trust, for successful exertions in the cause of compassion towards tortured and helpless animals; and I presume to make a serious call on the clergy and leading aristocracy of the districts implicated, for the exercise of their influence in this case, granting the reform to be practicable.

A Goose on a farm in Scotland, about seven years since, of the clearly ascertained age of eighty-one years, healthy and vigorous, was killed by a sow, whilst sitting over her eggs ; it was supposed she might have lived still many years, and her fecundity appeared to be permanent. Other geese have been proved to reach the age of seventy years.

It is asserted that, at the great goose-feeders near London, the stock is fed upon the purest and best food, kept in the highest state of cleanliness, and that they are among the finest and best with which the metropolis is supplied.

A gander and five geese comprise a single breeding stock. The goose sits upon her eggs from twenty-seven to thirty days, covering from eleven to fifteen eggs. A nest should be prepared for her in a secure place, as soon as carrying straw in her. bill, and other tokens, declare her readiness to lay. The earliness and warmth of the spring are the general causes of the early laying of geese, which is of consequence, since there may be time for two broods within the season, not however a common occurrence ; and which happening successively for two or three seasons, has occasioned some persons, formerly, to set a high price upon their stock, as if of a peculiar and more valuable breed than the common. The method, however, to attain this advantage is, to feed breeding geese high throughout the winter, with solid corn, and on the commencement of the breeding season, to allow them boiled barley, malt, fresh grains, and fine pollard mixed up with ale, or other stimulants.

With a good GANDER present, no mischief can happen to the sitting geese, without extraordinary alarm, he sitting centinel at the chamber-door of his wives. With respect to feeding the goose or duck upon the nest, it may be occasionally required, but is not a thing of much account, since they will generally repair to the water sufficiently often, from their natural inclination. The goose will not quit until she has completed her hatch, nor will it be very practicable to take any of the goslings from her, were it necessary, as she is too strong and resolute, and might kill some in the struggle.

It has been formerly recommended, to keep the newly-hatched GULLS in house, during a week, lest they get cramp from the damp earth, to which they are indeed liable; but we did not find this in-door confinement necessary, penning the goose and her brood between four hurdles, upon a piece of dry grass well sheltered, putting them out late in the morning, or not at all in severe weather, and ever taking them in early in the evening. Sometimes we have pitched double the number of hurdles, for the convenience of two broods, there being no quarrels among this sociable and harmless part of the feathered race, so unlike those quarrelsome and murderous fiends, the common, or gallinaceous fowls. We did not even find it necessary to interpose a parting hurdle, which on occasion may be always conveniently done. The FIRST FOOD similar to that of the duck, but with *some* cooling greens, clivers, or the like, intermixed — namely, barley-meal, bruised oats, or fine pollard.

For the FIRST RANGE, a convenient field containing water is to be preferred to an extensive common, over which the gulls or goslings are dragged by the GOOSE, until they become cramped or tired, some of them squatting down and remaining behind at evening, which the good housewife sees no more. It is also necessary to destroy all the HEMLOCK or deadly night-shade, within the range of young geese, many of which drop off annually, from eating that poison, when the cause is not suspected. I know not that the elder geese will eat hemlock, but I believe that both the young and old have been occasionally killed by swallowing slips of YEW. The young becoming pretty well feathered, will also be too large to be contained or brooded beneath the mother's wings, and will then sleep in groups by her side, and must be supplied with good and renewed straw beds, which they convert into excellent dung. Being now able to frequent the pond, and range the common at large, the young geese will obtain their living, and few people, favourably situated, allow them any thing more, excepting the vegetable produce of the garden.

It has, however, been my constant practice, always to dispense a moderate quantity of any solid corn or pulse at hand, to the flocks of store geese, both morning and evening, on their going out and their return, in the evening more especially, together with such greens as chanced to be at command: cabbage, mangold leaves, lucern, tares, and occasionally sliced carrots and turnips. By such full keeping our geese were ever in a fleshy state, and attained a large size; the young ones were also forward and valuable breeding stock. It may be here necessary to state, that the German word *mangold*, which is commonly anglicised *mangel*, signifies beet and *wurtzel* root. The latter word is then superfluous. We do not phrase it turnip *root* or carrot *root*. Thus much for the economy of words.

Geese managed on the above mode will be speedily FATTENED green, that is, at a month or six weeks old, or after the run of the corn stubbles. Two or three weeks after, the latter must be sufficient to make them thoroughly fat; indeed, I prefer a goose fattened entirely in the stubbles, granting it to have been previously in good case, and be full fed in the field; since an over-fattened goose is too much in the oil-cake and grease-tub style, to admit even the idea of delicacy, tender firmness, or true flavour. But when needful to fatten them, the feeding-houses already recommended are most convenient. With clean and renewed beds of straw, plenty of clean water, and upon oats crushed or otherwise, pea or bean-meal, the latter, however, coarse and ordinary food; or pollard; the articles mixed up with skimmed milk when to be obtained, geese will fatten pleasantly and speedily. Very little greens of any kind should be given to fattening geese, as being too laxative, and occasioning them to throw off their corn too quickly; whence their flesh will prove less substantial and of inferior flavour. Greens are the more proper food for store geese.

It is said that geese may be fed to advantage on turnips, cut in small pieces, similar to dice, but not so large, and put into a trough of water. Mr Cobbett says, 'Geese can be kept to advantage only where there are *green commons*, and there they are easily kept; live to a very great age, and are among the hardiest animals in the world. If *well kept*, a goose will lay a hundred eggs in a year.

'The French put their eggs under large hens of common fowls, to each of which they give four or five eggs ; or under turkeys, to which they give nine or ten goose-eggs. When the young ones are hatched, they should be kept in a warm place for about four days, and fed on barley-meal, [Indian meal is as good], and then they will begin to graze. Water for them, or for the old ones to *swim* in is by no means *necessary*, nor perhaps even *useful*. Or how is it that you see such fine geese all over Long Island, where there is scarce such a thing as a pond or a run of water? * Geese are raised by *grazing*, but to *fat* them something more is required. Corn, boiled Swedish turnips, or carrots, or white cabbages, or lettuces, make the best fatting.'

The Swan.

The SWAN. Exclusive of ornament, the chief use of the swan is to clear pieces of water from weeds, a service which was effected some years since by swans, over a considerable breadth of water, at Clumber, the residence of the Duke of Newcastle, in the course of a year or two; but they are generally reputed great destroyers of the young fry of fish.

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* Water for geese to swim in, however, is said by other writers to be useful, if not indispensable for the welfare of geese, as it preserves them from vermin.

The antiquity of this delicate and stately bird, the silent swan, is conspicuous in the pages of history and of poetry. The prototype of the domesticated breed has been probably lost in the lapse of time, since the wild swans of all countries differ essentially both in plumage and organic structure, from the tame. The longevity of the swan seems to equal, if not exceed, that of any other animal, as it is said to live three centuries, a fact, which it seems strange, and is to be regretted, has not been correctly ascertained in some of our great families of old, so extremely attached to this noble bird.

The swan feeds like the goose, and has the same familiarity with its keepers, kindly and eagerly receiving bread which is offered, although it is a bird of courage equal to its apparent pride, and both the cock and hen are extremely dangerous to approach during incubation, or whilst their brood is young, as they have sufficient muscular force to break a man's arm with a stroke of their wing. They both labour hard in forming a nest of water plants, long grass and sticks, generally in some retired part or inlet of the bank of the stream or piece of water on which they are kept. The hen begins to lay in February, producing an egg every other day, until she has deposited seven or eight, on which she sits six weeks, although Buffon says it is nearly two months before the young are excluded. Swans' eggs are much larger than those of a goose, white, and with a hard, and sometimes tuberous shell. The cygnets are ash-coloured when they first quit the shell, and for some months after; indeed, they do not change their colour, nor begin to moult their plumage, until twelve months old, nor assume their perfect glossy whiteness until advanced in their second year.

The CYGNOIDES from Guinea, commonly called the SWAN-GOOSE, or the MUSCOVY-GOOSE, a sort of middle species between the swan and the goose, is sufficiently plentiful in Britain, and unites so well with the common goose, according to report, as to cause little or no perceptible difference in the progeny. They are distinguished by their erect gait, and the screaming which they continue during almost the whole day, without any obvious incitement.

The BLACK SWANS of New Holland I have not hitherto had the opportunity of seeing. They were introduced into this country some years since, but I believe the number bred or remaining is very small. They are said to degenerate here as to size, yet the imported individuals, it seems, were not larger than our indigenous breed. There is said, by naturalists, to be some disparity between the wild and tame black swan, in respect to the bill and organization of the bones.

Pea and Guinea Fowls, and Pheasants.

The Pea Cock and Hen, and Guinea Fowls, are always kept by the London dealers, whence any person in the country, desirous of breeding them, may be supplied with breeding stock. Exclusive of the consideration of ornament to a poultry yard, the peacock is very useful for the destruction of all kinds of reptiles, but at the same time some peacocks are said to be vicious, and apt to tear to pieces and devour young chicks and ducklings, suffered to be within their reach. They are also destructive in a garden.

This most beautiful of all the feathered race is supposed, originally, a native of India, and peacocks are said to be at present found in a wild state upon the islands of Java and Ceylon. The history of king Solomon is a voucher for the antiquity of the peacock, and also the choice of the goddess Juno, who selected this for her favourite bird, from its gorgeous and brilliant plumage and majesty of demeanor. It is asserted by the ancient writers that the first peacock was honoured with a public exhibition at Athens; that many people travelled thither from Macedonia, to be spectators of that beautiful phenomenon, the pa ragon of the feathered race. It is probable the ancients, as well as the moderns, introduced the peacock upon the table, rather as an ornament than a viand. There are varieties of this bird, some white; they perch on trees like the turkey. Their age extends to twenty years, and at three, the tail of the cock is full and complete. The cock requires from two to four hens, and where the country agrees with them, they are very prolific. They are granivorous like other domestic fowls, preferring barley.

The PINTADA, or Guinea Hen, has been said to unite the character and properties of the pheasant and the turkey. It is about the size of the common hen, but standing high upon its legs, gives it the appearance of a larger size. The back is round, with the tail turned downwards, like the partridge. It is an active, restless, and courageous bird, and will even attack the turkey, although so much above its size. The Guinea fowls assimilate perfectly with the common species in habits and in kinds of food ; but have this peculiarity, that the cocks and hens are so nearly alike, it is difficult to distinguish them. They have also a peculiar gait and cry, or chuckling. Thehead is covered with a kind of casque, with wattles under the bill, and the whole plumage is either black or dark grey, speckled with regular and uniform white spots. The pintada is generally supposed to be a native of Guinea, whence its additional name; but it is in equal plenty in America. In those countries it perches on trees, and, in the wild state, makes its nest in the holes of the palm-tree. It is gregarious, and often found in large flocks. Like the peacock, it may be said to be universally domesticated.

There is sometimes, but not invariably, a distinction of colour in certain parts, between the cock and hen pintada; the manner and gait of the cock, however, soon distinguish him. However long domesticated, these birds retain some part of their original wild habits, and will stray in search of a place in which to drop their eggs, without any apparent solicitude as to their security. They lay an abundance of eggs, smaller than those of the common hen, speckled, resembling wild, rather than common, eggs. It sometimes happens that they are everlasting layers, in which case, and indeed generally, it is most profitable to hatch pintadas under a common hen, which will cover an additional number of those small eggs. The chicks are extremely tender, and should not be hatched too early in the spring; a sudden change of the wind in March, to the N. E., has destroyed many a brood of them.

SECTION XIII.

Pheasants.

The PHEASANT *(phasianus)* is a native of the old continent, and supposed by ancient authors to have been originally found on the banks of the PHASIS, whence the name was probably derived. The Argonauts, in their celebrated expedition to *Colchis*, together with the golden fleece, brought back with them the Asiatic pheasant, a bird, the plumage of which was equally rich and resplendent with the fleece. Authors, however, differ on this point of ancient history; a discrepancy of no material consequence here. This bird, indeed, may well vie with the peacock, if not for gaudiness, yet for the richness, variety, and sober majesty of its colours, and for the beautiful symmetry of its form; and when Crœsus, king of Lydia, was seated on his throne, adorned with royal magnificence, and all the blazing pomp of Eastern splendour, it is recorded that he asked Solon whether he had ever before beheld so much finery. The Greek philosopher replied, he had seen the beautiful plumage of the pheasant, and had found nothing superior.

The pheasant is not a long-lived bird; but it is probable the PERIOD OF EXISTENCE assigned to it by some writers, namely, six or seven years, is too short. The wholesomeness of its flesh was proverbial among the old physicians; it is of a high flavour and alkalescent quality, and in perfection during autumn. A young pheasant very fat is reckoned an exquisite dainty. In a wild state, the hen LAYS from eighteen to twenty eggs in a season, but seldom more than ten in a state of confinement. Pheasants are not to be tamed by domestication, like other fowls; nor is the flesh of those brought up in the house, in any degree comparable to that of the wild pheasant: thence they are bred at home, either merely for show, or for the purpose of replenishing the proprietor's grounds, both with regard to number or particular varieties. However good nursing mothers in a wild state, pheasant hens are far otherwise in the house, whence their eggs are always HATCHED at home by the common hen, generally, at present, by the smooth-legged BANTAM. The above particulars on the laying and habits of the pheasant, were derived from the experience of a number of breeders and fanciers of the bird, and to a certain degree of that of the author. It is probable they may yet be found *generally* correct.

The natural NEST of the pheasant is composed of dry grass and leaves, which being provided for her in confinement she will sometimes properly dispose. The cock is bold, voracious, and cruel; and one which I had many years ago, caught a canary bird which had accidentally escaped, and was observed with it beneath his talons, in the proper attitude of the hawk, tearing it to pieces and devouring it.

The progeny between the pheasant and the common fowl, are necessarily MULES, as proceeding from different species, although of the same genus. They may be obtained, with some little difficulty, which they scarcely repay, as being neither an improvement in form nor goodness of the flesh. It is recommended, as the best method, to confine a cock-pheasant half-grown with two pullets of the same age, either game, bantam, or common, as may be desired: or to make a house for common hens in a pheasant preserve near home, where they will soon associate with the pheasants, and be trodden by the cocks. Hybrids, or mules, between the pheasant and black grouse, have been occasionally found on the moors.

The best known VARIETIES of the pheasant, are the GOLDEN, the SILVER, the PEACOCK or SPOTTED, and the COMMON EUROPEAN or ENGLISH, generally brown with a less brilliancy of colouring. Mr Castang, however, enumerates six distinct varieties, exclusive of the common, as follow: the GOLD and SILVER, natives of China, and very hardy in this country, and good breeders. The RING-NECKS, natives of Tartary, bred in China, very scarce; their plumage very beautiful. The WHITE and PIED; both sorts will intermix readily with our common breed, as will the BOHEMIAN, one of the most beautiful of its kind, and equally scarce. The GOLDEN variety is generally of the highest price, the common most hardy, and of the largest size.

Instructions for breeding Pheasants. By P. CASTANG.

EGGS being provided, put them under a hen that has kept the nest three or four days; and if you set two or three nests on the same day, you will have the advantage of shifting the good eggs. At the end of ten or twelve days, throw away those that are bad, and set the same hen or hens again, if sitting hens should not be plenty.

The hens having sat their full time, such of the young pheasants as are already hatched put into a basket, with a piece of flannel, till the hen has done hatching.

The brood, now come, put under a frame with a net over it, and a place for the hen, that she cannot get to the young pheasants, but that they may go to her: and feed them with boiled egg cut small, boiled milk and bread, alum curd, ants' eggs, a little of each sort, and often.

After two or three days, they will be acquainted with the call of the hen that hatched them, may have their liberty to run on the grass-plot, or elsewhere, observing to shift them with the sun, and out of the cold winds; they should not have their liberty in the morning till the sun is up; and they must be shut in with the hen in good time in the evening.

Every thing now going on properly, you must be very careful (in order to guard against the distemper to which they are liable) in your choice of a situation for breeding the birds up; and be less afraid of foxes, dogs, pole-cats, and all sorts of vermin, than the *distemper*. I had rather encounter all the former than the latter: for those with care may be prevented, but the distemper once got in is like the plague, and destroys all your hopes. What I mean by a good situation, is nothing more than a place where no poultry, pheasants, or turkeys, &c, have ever been kept; such as the warm side of a field, orchard, pleasure-ground, or garden, or even on a common, or a good green lane, under circumstances of this kind; or by a wood side; but then it is proper for a man to keep with them under a temporary hovel, and to have two or three dogs chained at a proper distance, with a lamp or two at night. I have known a great number of pheasants bred up in this manner in the most exposed situations.

The birds going on as before mentioned, should so continue till December, or (if very early bred,) the middle of August. Before they begin to shift the long feathers in the tail, they are to be shut up in the basket with the hen regularly every night; and when they begin to shift their tail the birds are large, and begin to lie out, that is, they are not willing to come to be shut up in the basket: those that are intended to be turned out wild, should be taught to perch, (a situation they have never been used to;) this is done by tying a string to the hen's leg, and obliging her to sit in a tree all night; be sure you put her in the tree before sun-set; and if she falls down, you must persevere in putting her up again till she is contented with her situation; then the young birds will follow the hen and perch with her. This being done, and the country now covered with corn, fruits, and shrubs, &c, &c, they will shift for themselves.

For such young pheasants as you make choice of for your breeding stock at home, and likewise to turn out in spring following, provide a new piece of ground, large and roomy for two pens, where no pheasants, &c, have been kept, and there put your young birds in as they begin to shift their tails. Such of them as you intend to turn out at a future time, or in another place, put into one pen netted over, and leave their wings as they are; and those you wish to keep for breeding put into the other pen, cutting one wing of each bird. The gold and silver pheasants you must pen earlier, or they will be off. Cut the wing often; and when first penned feed all your young birds with barley-meal, dough, corn, and plenty of green turnips.

A Receipt to make Alum Curd.

Take new milk, as much as your young birds require, and boil it with a lump of alum, so as not to make the curd hard and tough, but custard like.

N. B. A little of this curd twice a day, and ants' eggs after every time they have had a sufficient quantity of the other food. If they do not eat heartily, give them some ants' eggs to create an appetite, but by no means in such abundance as to be considered their food.

The distemper alluded to above, is not improbably of the same nature as the roup in chickens, contagious, and dependent on the state of the weather; and for prevention requiring similar precaution.

GENERAL DIRECTIONS. Not more than FOUR HENS to be allowed in the pens to one cock. And in the OUT COVERS, three hens to one cock may be sufficient, with the view of allowing for accidents, such as the loss of a cock or hen. Never put more EGGS under a hen than she can well and closely cover, the eggs fresh and carefully preserved. SHORT BROODS to be joined and shifted to one hen: common hen pheasants in close pens, and with plenty of cover, will sometimes make their NESTS and hatch their own eggs; but they seldom succeed in rearing their brood, being so naturally shy; whence, should this method be desired, they must be left entirely to themselves, as they feel alarm even in being looked at. Eggs for setting are generally ready in April. Period of INCUBATION the same in the pheasant as in the common hen. Pheasants, like the pea-fowl, will clear grounds of insects and reptiles, but will spoil all WALL-TREES within their reach, by pecking off every bud and leaf.

Feeding. Strict CLEANLINESS to be observed, the meat not to be tainted with dung, and the water to be pure and often renewed. Ants' eggs being scarce, hog-lice, ear-wigs, or any insects may be given; or artificial ants' eggs substituted, composed of flour beaten up with an egg and shell together, the pellets rubbed between the fingers to the proper size.

FOOD for grown pheasants, barley or wheat; generally the same as for other poultry. In a cold spring, HEMP SEED, or other warming seeds are comfortable, and will forward the breeding stock.

SECTION XIV.

Pigeons.

The Pigeon is recorded as one of the most ancient inhabitants of all climates, those excepted in the vicinity of the poles; it prospers abundantly in temperate regions, but in a still higher degree under the burning sun of the tropics, no heat being too ardent for its natural constitution. The wild pigeons of cold countries are said to emigrate towards the south on the approach of the winter. Pigeons exhibit a satisfactory proof of the superiority of the civilized over the savage or mere natural state, in their multitudinous increase and endless varieties, in a state of domestication, under the fostering care and all-subduing art of man. From their peculiar beauty and innocence, they have always ranked among the chief feathered favourites of mankind; and in the eastern countries, the original sources of religious superstition, the dove has ever been a great object of veneration, as an emblem of something divine.

Buffon enumerates upwards of thirty **varieties** of the pigeon, which, according to his usual systematic plan, its convenience perhaps being rather more obvious than its accuracy, he derives from one root, namely, the STOCK-DOVE, or common wild pigeon. All the varieties of colour and form which we witness, he attributes to human contrivance and fancy. There exist, nevertheless, essential specific differences in these birds, which seem rather attributable to the nature of the region, soil, or climate, to which they are indigenous, than to the art of man.

Both in the ancient and modern world, this beautiful and variegated genus of birds has been cherished by man, as a source of amusement, and of gratification to the eye, as well as of profit, in the article of provision for the table. Among certain of the nations of antiquity, moreover, pigeons were held sacred, and their lives no one dared assail. The useful qualification of MESSENGER, appertaining to the Asiatic and African species of the pigeon, is of high antiquity; and we read, in the time of the Crusades, of an Arabian prince, who had a sort of telegraphic communication kept up in his dominions, through the instrumentality of pigeons, which carried letters, and were regularly relieved at the appointed posts. From those, doubtless, the breed celebrated in Europe, under the name of THE CARRIER, has proceeded.

In modern times, those varieties which are kept for the purposes of amusement and show, are styled FANCY BREEDS, and they form a distinct article of commerce in cities and great towns, the varieties, as they chance to be in fashion, bringing a considerable price. In London, the pigeon fanciers immemorially, I believe, have had a club, in which premiums are awarded, and the notable science of the fancy, through the medium of crossing colours and forms, is promoted and perpetuated. The chief objects of the fancy have hitherto been those varieties styled ALMOND (probably *ermine*) TUMBLERS, CARRIERS, and the birds with great crops, the most fashionable variety of which is the POUTING HORSEMAN. The specific merits of these breeds are indicated by their names. The tumbler exercises that faculty in the air, but is chiefly valued for his peculiar form and variegated plumage. The carrier, as a messenger, cuts the air with almost inconceivable swiftness. This is the *Columba tabellaria*, the famous carrier or messenger, between *Aleppo* and *Alexandria in Egypt*. The pouter distends his crop to a size attractive to curiosity, and by his grotesque attitudes and familiarity with man, engages his attention.

The PIGEON is monoganous, that is, the male attaches and confines himself to one female, and the attachment is reciprocal; the fidelity of the dove to its mate being proverbial. Young pigeons are termed SQUEAKERS, and begin to breed at about the age of six months, when properly managed: their courtship, and the well known tone of voice in the cock, just then acquired and commencing, are indications of their approaching union. Nestlings, whilst fed by the cock and hen, are termed SQUABS, and are at that age sold and used for the table. The dove-house pigeon is said to breed monthly, being well supplied with food, more particularly when the ground is bound by frost, or covered with snow. At any rate, it may be depended on, that pigeons of almost any healthy and well established variety, will breed eight or ten times in the year; whence it may be conceived, how immense are the quantities which may be raised.

The first step towards PIGEON KEEPING, is, undoubtedly, to provide a commodious place for their reception, of which I shall afterwards speak; the next, to provide the pigeons themselves. These will be had in pairs, but if not actually MATCHED, pains must be afterwards taken, to that end, that no time be lost; indeed, they may be matched according to the fancy of the keepers, for the purpose of varying the colours, or with any other view. But it is necessary to give a caution on the subject of OLD PIGEONS, of which a bargain may offer, since the difficulty of retaining them is so great, indeed insuperable, without the strictest vigilance. Nothing short of cutting their wings, and confining them closely until they have young to attach them to the place, will be a security; and even afterwards, they have been known to take flight with the first use of their wings, and leave their nests. I have had several examples of this. Thence it is always preferable to purchase SQUEAKERS, or such as have not yet flown: these, being confined, in a short time, well fed, and accustomed gradually to the surrounding scenery, before they have acquired sufficient strength of wing wherewith to lose themselves, will become perfectly domesticated.

The DOVE-COTE, or pigeon-loft, as to its situation or extent, will necessarily depend on convenience, one GENERAL RULE, however, must be invariably observed, — that every pair of pigeons have two holes, or rooms, to nest in. Without this indispensable convenience there will be no security, but the prospect of constant confusion, breaking of eggs, and destruction of the young. Pigeons do well near dwellings, stables, bake-houses, brew-houses, or such offices; or their proper place is in the poultry-court. A dove-cote is a good object, situate upon an island, in the centre of a piece of water: indeed, such is a proper situation for aquatic poultry, and rabbits also; and may be rendered extremely beautiful and picturesque by planting, and a little simple ornamental and useful building. Where pigeons are kept in a room, some persons prefer making their nests upon the floor, to escape the danger of the young falling out; but in all probability this is to guard against one risk, and incur a great number, particularly that of rats and other vermin.

Cleanliness is one of the first and most important considerations: the want of it in a dovecote will soon render the place a nuisance not to be approached, and the birds, both young and old, will be so covered with vermin, and besmeared with their own excrement, that they can enjoy no health or comfort, and mortality is often so induced. Ours were cleaned daily; thoroughly once a week, a tub standing at hand for the reception of the dung, the floor covered with sifted gravel, often renewed. Pigeons are exceedingly fond of water, and, having a prescience of rain, will wait its coming until late in the evening, upon the house-top, spreading their wings to receive the refreshing shower. When they are confined in a room, they should be allowed a wide pan of water, to be often renewed, as a bath, which cools, refreshes, and assists them to keep their bodies clear of vermin. In the attendance upon pigeons, caution is necessary with respect to their fighting, to which they are more prone than might be expected, often to the destruction of eggs or young, or driving the weakest away.

The shelves should be placed sufficiently high, for security against vermin, a small ladder being a necessary appendage. The usual breadth of the shelves is about twenty inches, with the allowance of eighteen between shelf and shelf, which will be sufficient not to incommode the tallest pigeons. Partitions between the shelves may be fixed at the distance of about three feet, making a blind, by a board nailed against the front of each partition, whence there will be two nests in the compass of every three feet, so that the pigeons will sit in privacy, and not liable to be disturbed. Or a partition may be fixed between each nest; — a good plan, which prevents the young from running to the hen, sitting over fresh eggs, and perhaps occasioning her to cool and addle them: for when the young are about a fortnight or three weeks old, a good hen will leave them to the care of the cock and lay again.

Some prefer BREEDING-HOLES entirely open in front, for the greater convenience in cleaning the nests; but it is from those that the squabs are likely to fall, thence a step of sufficient height is preferable. The tame pigeon seldom taking the trouble to make a nest, it is better to give her one of hay, which prevents her eggs from rolling. Or a straw basket, or unglazed earthen pan, may be placed in every nest, apportioned to the size of the pigeons you breed. A PAN of three inches high, eight inches over the top, and sloping to the bottom like a basin, will be of sufficient size for a TUMBLER, or a small pigeon, whilst one of double those dimensions will be required for a large RUNT. A brick should always be placed in contiguity to the pan, to enable the cock and hen to alight with greater safety upon the eggs.

FOOD and WATER should be given in such way, as to be as little as possible contaminated with the excrement, or any other impurity. Our pigeons having been constantly attended, we have never found the need of any other convenience than earthen pans; but there have been ingenious inventions for this purpose, of which the MEAT-BOX and WATER-BOTTLE following are specimens. The meat-box is formed in the shape of a hopper, covered at the top to keep clean the grain, which descends into a square shallow box. Some fence this with rails or holes on each side, to keep the grains from being scattered over; others leave it quite open that the young pigeons may the more easily find their food.

The WATER-BOTTLE is a large glass bottle, with a long neck, holding from one to five gallons, its belly shaped like an egg, that the pigeons may not light and dung upon it. It is placed upon a stand, or three-footed stool, made hollow above, to receive the belly of the bottle, and let the mouth into a small pan beneath: the water will so gradually descend out of the mouth of the bottle as the pigeons drink, and be sweet and clean, and always stop when the surface reaches the mouth of the bottle.

To MATCH or PAIR a cock and hen, it is necessary to shut them together, or near and within reach of each other; and the connexion is generally formed in a day or two. Various rules have been laid down, by which to distinguish the cock from the hen pigeon; but the masculine forwardness and action of the cock, is for the most part distinguishable.

INCUBATION. The great increase of domestic pigeons does not proceed from the number of eggs laid by them, but from the frequency of their hatching. The hen lays but two eggs and immediately proceeds to incubation. Having laid her first egg, she rests one day, and, on the next, lays her second egg. They usually stand over the first egg, not sitting close until they have two, whence, both the young are hatched nearly at the same time: there are some exceptions, however, to this rule of nature, and the hen having sat close at first, one young bird may be hatched a day or two before the other. They often spoil their first eggs from inexperience.

The PERIOD of INCUBATION is NINETEEN or TWENTY days from laying the first egg, and SEVENTEEN or EIGHTEEN from the last. The labour of sitting is equally divided between the cock and hen, excepting that the hen always sits by night. She is relieved in the morning by the cock, which sits during the greater part of the day. The business of feeding the young is also divided between the parents; and the cock has often brought up the young, on the accidental loss of his mate. Should not the eggs be hatched in due time, from weakness, some small assistance may be necessary to extricate the bird from the shell; or should they be addled, it is generally held necessary to provide the cock and hen with a borrowed pair of young, or at least one to feed off their soft meat, which else may stagnate in their crops and make them sick: but as young ones for this purpose may not always be at hand, the exercise of flying, fresh gravel, and those saline compositions generally given to pigeons, are the proper remedy. Addled, or rotten eggs, should be immediately removed.

Pigeons are extremely liable to be lost by accident, and that which is unaccountable, although they will find their home from such great distances, they nevertheless often lose themselves in their own neighbourhood. Should a cock or hen be lost during incubation, the eggs will be spoiled in twenty or thirty hours, and may then be taken from the nest; but if the accident happen after hatching, the single parent left will feed the young. Should both parents be lost, the young are very easily accustomed to be fed by hand with small peas or tares, much preferable to barley. We did not find any necessity of recourse to the old housewife's instrument, the hollow reed.

Soft meat is a sort of milky fluid or pap secreted in the craw of pigeons, by the wise providence of nature, against the time when it will be wanted for the nourishment of their young. In all probability, from instinct, the pigeons eat a greater quantity at this time, and the grain goes through a certain process in their crops, which produces the soft meat or pap in question. This they have the power of throwing up at will; and, in feeding, they inject it from their own bills into those of the young ones, the bills of which are taken into their own. This kind of feeding continues six or seven days, when the old ones begin to mix some harder food with it, until at length they feed with whole grain. When the time approaches for the hen to lay, the cock is often seen driving her from place to place, not suffering her to rest any where but in her nest, apparently from an instinctive apprehension that she may drop her egg in an improper place.

FOOD. Pigeons are entirely granivorous, and very delicate and cleanly in their diet; they will sometimes eat green vegetables, in particular warm salads, and are extremely fond of seeds. TARES, and the SMALLEST kind of HORSE BEANS, commonly called pigeon beans, are both the best and cheapest food for pigeons, but the pulse should always be old, that is to say, of the previous year; as the new will scour pigeons, as well as any other kind of live stock. SEEDS are occasionally given to pigeons, as a warming and stimulant diet; but according to my experience they greatly prefer rape and canary to hempseed. It has been remarked, that beans, sodden in salt-water, scour pigeons equally with new beans, and, in a voyage, suffering them to drink sea-water will soon kill them; although so generally benefited by salt, an excess of it is fatal, as it is also to vegetation, promoted as that is by a moderate quantity.

In most publications on the subject of pigeons, a dangerous mistake has been made in a term applied to beans. Small *tick* beans are recommended, instead of small horse-beans. Now, the *tick* or *kidwell* (in the western phrase), are the larger of the two common field varieties, and beside being inferior in quality, are too large for pigeons, which have been sometimes choked even with the common-sized horse-beans; on which account, the smallest possible should be procured, whence such are termed in the market accounts, 'pigeon-beans.' Pease, wheat, and buck-wheat or brank, are eaten by pigeons; but should be given only in alternation, not as a constant diet. The same of seeds. They yet prefer wheat. The strong scent of cummin and flavour of coriander seeds are said to have an alluring effect upon the olfactory nerves and palate of these birds; as also the scent of *asafœtida*, and other powerfully odoriferous drugs; and that the use of fumigations of such, in the dove-cote, will not only attract the pigeons to their home, but allure strangers, which may be wandering in search of a habitation.

The last dietetic, or rather, perhaps, medicinal article necessary to be described, is the SALT-CAT, so called from some old fancy of baking a real cat with spices, for the use of pigeons, which, however, I never observed to eat animal food. In compliance with this custom, I caused to be placed in the middle of the pigeon-loft, a dish of the following composition: loam, sand, old mortar, fresh lime, bay-salt, cummin, coriander, caraway seed, and allspice, moistened into a consistence with urine. The pigeons were constantly pecking at this, and were in a constant state of good health; how much of which may be attributed to the use of the cat, I cannot determine; but, certainly, they are extremely fond of it, and if it have no other merit, it prevents them from pecking the mortar from the roof of the house, to which otherwise they are much inclined. The cat was mixed and heaped up in the dish, a piece of board being placed upon the summit, to prevent the birds from dunging upon it; when become too hard it was occasionally broken for them.

The regular OLD FORMULA for this eat is as follows: gravel or drift-sand, unctuous loam, the rubbish of an old wall, or lime, a gallon of each — should lime be substituted for rubbish, a less quantity of the former will suffice — one pound of cummin-seed, one handful of bay-salt; mix with stale urine. Inclose this in jars, corked or stopped, holes being punched in the sides, to admit the beaks of the pigeons. These may be placed abroad.

Many fanciful and groundless tales may be found in old books, relative to the MEDICINAL and REMEDIAL properties of almost every part of the pigeon; thus much, however, may be relied on, their flesh, when young and in good condition, is a nourishing and stimulant diet; that of the full aged pigeon more substantial, but harder of digestion, and, in a considerable degree, heating. The general rule of colour affecting quality in the flesh, holds good in tame pigeons. The black and dark feathered are proportionally dark or brown fleshed, of high flavour, inclining to the game bitter of the wild pigeon. The light colour in the feathers, denotes light and delicate flesh. Their DUNG is of an extremely heating and drying quality, whether as a manure, or for medicinal purposes. It was, in former days, a principal ingredient in nitre-beds, when that article was almost entirely manufactured at home.

CARRIERS, HORSEMEN, and DRAGOONS, are travellers or messengers, and I have occasionally seen TUMBLERS turned off, at the distance of forty miles from home. The carrier, it is said, has performed a journey of forty miles in an hour and a half, and of even ninety miles in three hours. A dragoon has flown seventy-six miles in two hours and a half: this ancient fancy of flying pigeons had declined, but has, it seems, revived within a few years. The admired qualities in the TUMBLER are excessive high flight, so as to be almost imperceptible to the keenest eye, in fine and clear weather; perseverance in their flight for many hours together, and tumbling over and over repeatedly during their ascent and descent.

Whatever benefit or utility may have been derived, in ancient days, from these winged messengers, it is probable the moderns reap no other benefit from them than that of amusement and the gratification of curiosity, by flying them for prizes and betting. Scarcely, however, is there a great race or great pugilistic contest at distance from the metropolis, but a profitable use is *said* to be made by pigeon flyers, in sending instant intelligence of the result to their confederates in town. But after all, this appears, with perhaps a few exceptions, to have been from the beginning a regularly repeated *hoax;* and such is the opinion of a late writer in the Sporting Magazine. The practice, nevertheless, of flying pigeons between this country and the continent, has revived within the three or four last years, and has been frequently repeated. It is pretended, that speedy intelligence is thus kept up between London and Rotterdam, on the course of exchanges.

In 1825, the Society of Amateurs at Antwerp sent ninety carriers to Paris, to fly for a prize. They were started from the French capital at seven in the morning, and by noon of the same day, thirteen of them had reached home. The first arrived at half-past eleven o'clock.

By what kind of natural qualification birds are able to explore their way across such immense distances of land and sea, seems to mock all human powers of enquiry: and granting the accuracy of ancient relations in respect to the regular and successful use of pigeons as messengers, it appears to be one of those ancient arts said to be buried in the grave of time, which has not hitherto encountered resurrection. The present price of a pair of carriers is about six guineas.

By my memoranda, in 1801, I observe, that sixty-five pairs of old pigeons, and one hundred and forty squeakers of all sizes, regularly fed, consumed in one week, five pecks of the smallest beans, and ten quarts of seeds. The above old stock, without any young, consumed about half the quantity.

From the same. Fan-tails or Shakers, the head always in motion, are a beautiful stock, and good breeders, but so stupid and silly, as scarcely to be capable of taking care of themselves, or finding their home. Runts, although so much larger, breed as fast and equally forward as Tumblers. The duration of life in the pigeon is said to extend to about twenty years, and it is deemed full aged when the wings are full of the quill feathers.

Mr Cobbett remarks that 'a few pigeons may be kept about any cottage; for they are kept even in towns by labourers and artizans. They cause but little trouble. They take care of their own young ones; and they do not scratch and do mischief in gardens.

They want feeding with tares, peas or small beans, and buck wheat is very good for them. To *begin* keeping them, they must not have *flown at large* before you get them. You must keep them for two or three days shut up in the place which is to be their home; and then they may be let out, and will never leave you as long as they can get proper food, and are undisturbed with vermin, or unannoyed exceedingly by lice.

'The common dove house pigeon is the best to keep. They breed oftenest, and feed their young ones best. They begin to breed at about *nine months old*, and, if well kept, will give you eight or nine pair in a year. Any little place, a shelf in the cow shed; a board or two under the eaves of the house; or in short, in any place under cover, they will sit and hatch and breed up their young ones.

'It is not to be supposed that there could be much *profit* attached to them; but they are of this use; they are very pretty creatures, very interesting in their manners; they are objects of delight to *children* and to give them the early habit of fondness for animals, and of setting a value on them, which, as I have often had to observe, is a great thing.'

SECTION XV.

Rabbits.

Rabbit *(Lupus Cuniculus)* is indigenous in most temperate climates, but not so far north as the hare. In a wild state it forms long-winding burrows; keeps its hole by day; feeds morning, evening, and night on vegetables and grain; is the prey of hawks, badgers, polecats, and caught by ferrets.

Rabbits are animals proper to be allowed in a wild state, in those countries only, where are extensive wastes, and where corn and other farming productions are not at a high price: in populous and highly cultivated regions, they are a great and wasteful nuisance, and proofs are before the public, only a few years old, of nearly the whole produce of a farm being devoured by them, to the ruin of the tenant. This farm was situated in the vicinity of extensive preserves; but it is equally unfortunate for a farmer to be fixed near to, or within some miles of a rabbit-warren, since they will travel to a great distance, to feed either upon corn or vegetables, and if the soil and corn be to their liking, will always remain in sufficient numbers to stock a new district. At the same time, they are a good and profitable stock, domesticated; infinitely more prolific, under good management, than in their wild and exposed state, and their dung is extremely valuable upon a farm.

The RABBIT-HOUSE should stand upon a dry foundation, and be well ventilated. Exposure to too much humidity, whether externally or internally, is fatal to rabbits, which are liable to the rot like sheep, and from the same causes. The rains of 1799, which continued nearly four months, destroyed my stock of rabbits, which were hutted in a boarded shed, not well defended from the cold and moist air. Ventilation and fresh air are also necessary, where considerable numbers of these animals are kept, which will not else remain healthy, or prosper for any length of time: and even sudden mortality may ensue, from impure and stagnant air. A thorough draught or passage for the air is thence indispensable, and should be contrived in the building, with the convenience of shutting such opposite windows or doors in cold and wet weather.

The HUTS or HUTCHES are generally placed one above another, to the height required by the number of rabbits, and the extent of the room. Where a large stock is kept, to make the most of room, the hutches may be placed in rows, with a sufficient interval between, for feeding and cleaning, instead of being joined to the wall, in the usual way. It is preferable to rest the hutches upon stands, about a foot above the ground, for the convenience of cleaning under them. Each of these hutches, intended for breeding, should have two rooms, a feeding and a bed-room. Those are single, for the use of the WEANED RABBITS, or for the BUCKS, which are always kept separate.

When much green meat is given, rabbits make a considerable quantity of urine, and I have sometimes seen occasion to set the hutches sloping backwards a few degrees, a very small aperture being made the whole length of the floor to carry off the urine. A sliding door in the partition between the two rooms, is convenient for confining the rabbits during the operation of cleaning; which indeed, is a good argument for having all the hutches double, it being more troublesome to clean out a room with a number of rabbits in it, than with only one. It must not be forgotten, that the teeth of rabbits are very effectual implements of destruction to any thing not hard enough to resist them, and their troughs should be bound with something less penetrable than wood. As they are apt to scratch out their food, and dung in it, I have often thought it might be useful to adopt the feeding troughs with moveable boards, as well for rabbits as hogs.

The FLOOR of the hutches should be planed smooth, that wet may run off, and a common hoe with a short handle, and a short broom, are most convenient implements for cleaning these houses. The object being to obtain the dung pure, for sale, no litter should be allowed ; but on a farm where the dung is expended at home, the hutches should be littered with refuse hay or straw, perfectly dry. The rabbit-house to contain a tub for the dung, and a bin for a day's supply of hay, corn, roots, or other food, which should be given in as fresh a state as possible.

There are other modes of confining rabbits for breeding, in which they are left to their liberty, within certain bounds ; for example, an artificial mound walled in, in which they burrow and live as in the natural state ; and an island as described in Mr Young's Annals : methods which are certainly ornamental and pleasurable, as well perhaps as more for the comfort of the animals ; but surely not so profitable to the owner as hutching, in which mode, also, they may be preserved, with due care, in the highest state of health. On this head I find the following remark in my memoranda for the year 1805 : *Rabbits at large, must always suffer more in point of profit, by loss of number, than they* *gain, by cheaper feeding, exclusive of the mischief they do;* and this principle operates proportionally in limited enlargement, as in the unlimited upon the warren. They are quarrelsome and mischievous animals; and the bucks, when at liberty, destroy a considerable part of the young. A run abroad, indeed, for young rabbits, until a certain age, might be beneficial if *growth* were the object; but all rabbits must be separated at the age of puberty, or as soon as they become fit for breeding; they will else tear each other to pieces.

As to the VARIETIES of FORM and COLOUR, in the rabbit, the short-legged, with width and substance of loin, generally few in number, and to be obtained only by selection, are the most hardy, and fatten most expeditiously, taking on fat both internally and in the muscular flesh. They have besides the soundest livers, the rabbits being generally subject to defects of the liver; they are the smallest variety. There is a very LARGE VARIETY of the hare colour, having much bone, length and depth of carcase, large and long ears, with large eyes, resembling those of the hare. They might well be taken for hybrids or mules, but from the objection of their breeding. Their flesh is high coloured, substantial, and more savoury than that of the common rabbit: and they make a good dish, cooked like the hare, which, at six or eight months old, they nearly equal in size. The large white, and yellow and white species, have whiter and more delicate flesh, and cooked in the same way will rival the turkey.

With respect to COLOUR, I have always preferred the wild colour, and black, finding the skins of full as much worth as the white. The TURKISH, or FRENCH RABBIT, with long white fur, differs little from the common varieties; nor did I find their skins of more value, either for sale or home use. I have been in the habit of drying the skins, for linings of night-gowns, and other domestic purposes; but have always found reason to prefer the short, close fur.

A *connoisseur* has lately favoured the author with the following practical observations on HARES and RABBITS. 'According to the furriers, the Siberian hares are the finest in the world, for size, strength, and quality of the fur. Next to those, in point of size, are the *maukins*, found on the Isle of Man. The weight of one of them exceeds belief, and has been given as high as twelve to fourteen pounds. The hare skins of North Wales are also favourites with the trade, and in proportion to their size bring a higher price than any other, not excepting the maukins of our own high lands.

'RABBITS are divided into four kinds — *warreners*, *parkers*, *hedgehogs*, and *sweethearts*.

Burrowing under ground is favourable, it appears, to the growth of fur; and the warrener, though a member of a subterraneous city, is less effeminate than his kindred who roam more at large. His fur is most esteemed, and after him comes the parker, whose favourite haunt is a gentleman's pleasure grounds, where he usually breeds in great numbers, and not unfrequently drives the hares away. The hedgehog is a sort of vagabond rabbit, who travels tinker-like throughout the country, and who would be better clad if he remained more at home. Sweethearts are tame rabbits, and their fur, though sleek, is too silky and soft, to be of much use in the important branch of hat-making.' I believe I have had Essex and Lincolnshire marsh hares, equal to, if not above, the weight which seems to have so surprised our connoisseur.

BREEDING. The DOE will breed at the age of six months, and her period of GESTATION is thirty or thirty-one days. It should be premised, that the buck and doe are by no means to BE LEFT TOGETHER; but their union having been successful, the buck must be immediately withdrawn, and the doe tried again in three days: in fact, with rabbits, this business is conducted on the same principle as in the stud. Like chickens, the best breeding rabbits are those kindled in March. Some days before PARTURI-

TION, or kindling, hay is to be given to the doe, to assist in making her bed, with the flue, which nature has instructed her to tear from her body for that purpose. She will be at this period seen sitting upon her haunches, and tearing off the flue, and the hay being presented to her, she will, with her teeth, reduce and shorten it to her purpose. —Biting down of the litter or bed, is the first sign of approaching pregnancy. The number produced, generally between FIVE and TEN; and it is most advantageous always to destroy the weak or sickly ones, as soon as their defects can be perceived, because five healthy and well-grown rabbits are worth more than double the number of an opposite description, and the doe will be far less exhausted. She will admit the BUCK again with profit at the end of six weeks, when the young may be separated from her and WEANED. Or the young may be suckled two months, the doe taking the buck at the end of five weeks, so that the former litter will leave her about a week before her next parturition.

A notion was formerly prevalent, of the necessity for giving the buck immediately after the doe had brought forth, lest she should pine, and that no time might be lost; and if it were intended that no time might be lost in destroying the doe, such, indeed, would be the most successful method. Great care should be taken that the doe, during her gestation, be not approached by the buck, or indeed by any other rabbit; as, from being harassed about, she will almost certainly CAST her young. One doe in a thousand may DEVOUR her young; the sign that she ought to be otherwise disposed of. Some does admit the buck with difficulty, although often apparently in season; such should be immediately fattened off, since it can never be worth while to keep an objectionable individual for breeding, of a stock to be produced in such multitudes. Should the doe be WEAK on her bringing forth, from cold caught or other cause, she will drink beer-caudle, as well as any other lady; or warm fresh grains will comfort her; a malt mash; scalded fine pollard, or barley-meal, in which may be mixed a small quantity of cordial horse-ball.

With due attention to keeping them warm and comfortable, and guarding against any sudden impression from cold, and more particularly moist air, and with the aid of the best and most nourishing food, I have bred rabbits throughout the WINTER, with nearly equal success as in the summer season. But, in truth, their produce is so multitudinous, that one might be well satisfied with four or five litters, during the best part of the year, giving the doe a winter fallow. — Even four litters would, upon the lowest calculation, produce TWENTY YOUNG ONES ANNUALLY to each doe — equal to an annual TWO THOUSAND from a stock of ONE HUNDRED DOES. I have no experience of does, as breeders, beyond the FIFTH year: the BUCK will come into use at six, or even four months old, and be in perfection from the age of two to three years.

FEEDING. Upon a regular plan, and with sufficient attendance, it is better to FEED three times than twice a day. The art of feeding rabbits with safety and advantage is, always to give the upper hand to dry and substantial food. Their nature is congenial with that of the sheep, and the same kind of food, with little variation, agrees with both. ALL WEEDS, *and the refuse of vegetation, should be banished from Rabbit feeding*. Such articles are too washy and diuretic, and can never be worth attention, whilst the more solid and nutritious productions of the field may be obtained in such plenty, and will return so much greater profit. Rabbits may, indeed, be kept, and even fattened upon roots, good green meat, and hay; but they will pay for corn; and this may be taken as a general rule: —*Rabbits which have as much corn as they will eat, can never take any harm from being indulged with almost an equal portion of good substantial vegetables.* However, the test of health is, that their dung be not too moist. Many, or most, of the town feeders never allow any greens at all; the reason, I suppose, because they feed almost entirely on grains. The CORN proper for rabbits: — oats, peas, wheat; pollard, and some give buck wheat. The GREENS and ROOTS, the same as our cattle crops, namely carrots, Jerusalem artichokes, and if potatoes, baked or steamed. Lucerne, cabbage-leaves, clover, tares, furze. I have had them HOVEN, from eating rape; and not improbably, mangel wurtzel might have a similar effect. Clover and meadow hay, pea and bean straw.

Rabbits are generally sold from THE TEAT, but there is also a demand for those of larger size, which may be fattened upon corn and hay, with an allowance of the best vegetables. *The better the food, the greater weight, better quality, and more profit,* which I apprehend to be generally the case in the breeding of all animals. Some fatten with fresh grains and pollard. I have tried all wheat, and all potatoe oats, comparatively; but could find no difference in the goodness of the flesh. The rabbit's flesh being dry, the allowance of succulent greens may tend to render it more juicy; and I suppose the old complaint of the dryness of the flesh in Devon beef entirely fed with hay, might be remedied in the same way. Rabbits are in perfection for feeding at the FOURTH or SIXTH month; beyond which period, their flesh becomes more dry and somewhat hard. It requires THREE months, or nearly so, to make a rabbit thoroughly fat and ripe; half the time may make them eatable, but by no means equal in the quality of the flesh. They may yet be over fattened, as appears by specimens exhibited a few years since at Lord Somerville's show, which were loaded with fat without and within, like the best feeding sheep; and at the late London cattle show, two were exhibited, one of them exceeding the weight of 15lbs.

The FLESH of the rabbit is esteemed equally digestible as that of fowls, and equally proper for the table of the invalid.

CASTRATED rabbits might be fattened, no doubt, to the weight of upwards of ten or even fifteen pounds, at six or seven months old. The operation should be performed at the age of six or seven weeks. With respect to QUANTITIES of corn consumed in fattening; — August, 1813, killed a young buck, which weighed three pounds, fit for the spit; it was put up in good case, and was only one month in feeding, consuming not quite four quarts of oats, with hay, cabbage, lucerne, and chicory; the skin, silver and black, worth four pence.

In SLAUGHTERING full-grown rabbits, after the usual stroke upon the neck, the throat should be perforated upwards towards the jaws with a small pointed knife, in order that the blood may be evacuated, which would otherwise settle in the head and neck. It is an abomination to kill poultry by the slow and torturing method of bleeding to death, hung up by the heels, the veins of the mouth being cut; but still more so the rabbit, which in that situation utters horrible screams. The ENTRAILS of the rabbit, whilst fresh, are said to be good food for fish, being thrown into ponds.

The rabbit is a CARESSING animal, and equally fond, with the cat, of the head being stroked; at the same time, it is not destitute of courage. A whimsical lady admitted a buck rabbit, named as above (Corney Buttercup), into the house, where he became her companion for upwards of a twelve-month. He soon intimidated the largest cats so much, by chasing them round the room, and darting upon them, and tearing off their hair by mouthfuls, that they very seldom dared to approach. He slept in the lap by choice, or upon a chair, or the hearth-rug, and was as full of mischief and tricks as a monkey. He destroyed all rush-bottomed chairs within his reach, and would refuse nothing to eat or drink, which was eaten or drank by any other member of the family.

No live stock is less liable to disease than the rabbit, with regular and careful attention, such as has been pointed out, so that any sudden and accidental disorder is best and most cheaply remedied by a stroke behind the ears. But want of care must be remedied, if at all, by an opposite conduct, and improper food exchanged for its contrary. Thus if rabbits become POT-BELLIED in the common phrase, from being fed on loose vegetable trash, they must be cured by good hard hay and corn, ground malt or pease, toasted bread or captains' biscuits, or any substantial and absorbent food. Their common liver complaints are incurable, and when such are put up to fatten, there is a certain criterion to be observed. They will not bear to be pushed beyond a moderate degree of fatness, and should be taken in time, as they are liable to drop off suddenly. The dropsy and rot must be prevented, as they are generally incurable; nor is a rabbit worth the time and pains of a probable cure.

SECTION XVI.

Swine.

Sus. Porcus — the swine, pig, or hog, is too well known in all countries, to need a repetition of its generic description. It is one of the most useful, and perhaps the most profitable, of all the domestic animals, its flesh being greatly conducive to the purposes of luxury, but still more universally to the support of human life, in the laborious state. This animal is the general collector of offal and waste, whether in town or country, thereby foraging for a considerable part of its subsistence, the extra cost of which it moreover amply repays. Its flesh, second probably to beef, is the most substantial of human aliment, and may be eaten most frequently without disgust. The solidity of swine's flesh, says the author of the General Treatise on Cattle, is apparent on a comparison of the external superficies of a fat hog, with that of a fat sheep or bullock, the dimensions of which latter animal, must be so much more extensive to equal the weight of the first; which is also aptly illustrated by the well-attested examples of individual hogs, fed to the enormous weight each, of one hundred, and even one hundred and eighty-two stones, of eight pounds to the stone. This is also said to differ from all other land animals, in the circumstance that the adipose substance, or fat, entirely covers his muscular flesh, in one continued layer or stratum. The upright and pendant ear form specific distinctions in the swine, the latter being the general indication of larger SIZE. The singular variety not dividing the hoof, which were occasionally to be found in the neighbourhood of Windsor, some years since, is now probably extinct.

USES.

The well-known culinary uses of swine's flesh, are — AS ROASTING PIG AND PORK — FRESH AND PICKLED PORK — BACON — HAMS — BRAWN — SAUSAGES of various kinds — PUDDINGS of the blood ; whilst the LARD is valuable both for kitchen and medicinal use, and the SKIN, BRISTLES, AND HAIRS, for the purposes of manufacture.

SPECIES AND VARIETIES OF THE GENUS.

The SPECIES are Asiatic, African, and European, with which, perhaps, may be included the American PECCARY, bearing its naval on its back. The Æthiopean swine is large in a wild state, and has wattles under the eyes. The VARIETIES produced in this country, have generally originated in crosses with our indigenous breed, from the three grand specific divisions above cited: chiefly from the CHINESE, the black AFRICAN, the SPANISH and PORTUGUESE, of nearly the same colour, all more or less bare of hair; the red, or more properly yellow ITALIAN, and the WILD SWINE of the neighbouring continent. The motive for these foreign crosses has been to abate and reduce the redundant size and bone of our native stock, and to substitute superior delicacy of flesh and aptitude to fatten; both which views have succeeded, the latter, in the judgment of the author above quoted, in an ordinate degree. Another motive has been the extreme prolific quality of the southern and wild breeds.

BRITISH VARIETIES.

It will be sufficient to advert to the most material, and most noted, which are — the BERKS, HANTS, HEREFORD, SHROPSHIRE, YORKSHIRE, and MIDLAND county, for large size as bacon hogs; and the Oxford, Bucks, Essex, Suffolk, and Norfolk, as smaller breeds for pork feeding. All the above breeds are more or less imbued with foreign blood, the larger breed chiefly through the medium of the Berkshire cross, that county originally taking the lead in the foreign improvement. Berkshire and Hereford boars and sows have been used, within the last twenty or thirty years, in the improvement of the Irish breed of hogs, a coarse, hairy, and leggy variety, at length successfully improved into a form so nearly resembling that of our English stock, as to be with difficulty distinguished. Of those, both dead and alive, Ireland has exported immense quantities to this country. In the spring of 1830, according to the public papers, an Irish drove, amounting to upwards of fourteen thousand, passed a turnpike in the west.

The Hon. Oliver Fiske, of Worcester, has rendered great service to the community by introducing to the notice of farmers in this country a variety of this animal, called the BEDFORD BREED.

The following is an extract from a letter to Mr Fiske, written by his Excellency LEVI LINCOLN, Governor of Massachusetts, and President of the Worcester Agricultural Society; originally published in the *New England Farmer*, vol. iii, p. 222.

'I have great pleasure in voluntarily offering myself as your compurgator in the representations with which you have recently favoured the public, of the Bedford breed of swine. The care and perseverance which have marked your attention to the prospects and value of these animals, and the success which has followed your exertions to introduce them to the favor of *practical* farmers, require, at least, an acknowledgment of obligation from all those who have been particularly benefited by your liberality, and from no one more than from myself. This breed of swine has taken the place of a long legged, long nosed, flat sided, thriftless race, called by some the *Irish* breed, by others the Russian, which would barely pay by their weight for ordinary keeping, and never for one half the expense of fattening, if, indeed, grain would make them fat.

* * * * *

'I had three pigs butchered from the same litter, precisely seven and an half months old. Their weights, when dressed, were 230, 235, and 238½ lbs. One sold in Boston for 6¼ cents per lb.; the others were put up here for family use. The expense of keeping and fattening these pigs, I am satisfied, was less than with any other breed I have ever raised, and the proportion of bone and offal to the valuable parts, was surprisingly small. I have 15 more on my farm, part designed for the market in the spring, and part to be kept over as store swine, and their appearance will furnish ocular satisfaction of the propriety of all which has been said in favour of the breed.'

The above is followed by a communication from the Hon. O. Fiske, in which he says: 'I have obtained the following account of the introduction of this breed of swine from the Hon. T. Pickering. He saw them first on a farm of Gen. Ridgely, about 14 miles from Philadelphia. Gen. R. informed him that they were brought to this country as a present to Gen. Washington, from the Duke of Bedford, who committed them to the care of an English farmer by the name of Parkinson. This man took a farm in the neighbourhood of Baltimore; but instead of sending the swine to Gen. Washington, Parkinson sold them. Gen. Ridgely esteemed them very highly, and sent Col. Pickering a pair of them, in a vessel bound to Salem.

Mr John Reed, of Roxbury, obtained the breed from Col. P.'s stock; from Mr Reed I obtained the offspring from separate litters, and transferred them to Worcester, where by avoiding the breeding directly *in and in*, I have preserved them without degenerating. The race is most perfect and valuable, when unadulterated — but affords a most valuable improvement to our native breed, when judiciously crossed.'

Capt. John Mackay, of Boston, has exhibited at Brighton, a peculiar and excellent breed of swine, which have repeatedly received premiums from the Massachusetts Agricultural Society.

The author of *Gleanings in Husbandry*, an

English work of merit, says: ‘There is an animal kept tame in some of the East India Islands, called *Baby-roussa*, of the same genus as the common swine; which, if it would bear our climate, would be a useful animal, as it lives solely on herbs and the leaves of trees, and never ravages gardens like swine; the flesh is well tasted.’

The West India Islands and the Azores ought not to be forgotten, as producing a fine and delicate breed of PIGS, originally, it may be presumed, Spaniards, which have at various periods found their way thither; such have been used for the purpose of refining our native breeds. South America has also a fine breed of pigs. At Lord Somerville’s show, in 1809, Mr Gibbs, seedsman to the Board of Agriculture, exhibited a black wild pig from *Monte Video*. The sow and litter were imported together, and were very savage. They were deep in form, with very fine bone. One of them fattened very young to twenty-four stone, and although ripe and carrying a sufficient quantity of *flair*, it had more flesh in proportion, in the opinion of the butcher, than he had ever before witnessed. There was the least possible offal, the inside seeming to be filled with flesh. It was remarked that the great gut was smaller than the smallest gut of a small pig. This pork was excellent, inclining to the savoury.

It has never occurred, that I am aware, to our breeders, to preserve any of the fine foreign varieties pure, whence possibly a still more delicate pork might be raised than any we at present possess, granting the attempt were made with those which furnish muscular flesh or lean, as well as fat. Some of the wild swine of the opposite continent are well adapted to such purpose, and are besides very prolific. Most countries abounding with forests have herds of wild swine, these animals, under such circumstances, being always ready to quit domestication. I remember, very many years ago, two young boars retiring, on French leave, to an extensive wood, then the property of Mrs Eldred, between Colchester and Mersea Island, which became subsequently, during several years, the terror of the neighbourhood.

CONVENIENCES FOR SWINE.

Room and Ventilation are objects of the greatest import, where numbers are kept, and dry lodging, without which essentials, success must not be expected. Nor are swine, in whatever state, proof against excessive cold, for I have known instances of their being frozen to death in their sty, and have always remarked that severe weather materially checks their thriving, unless they be sufficiently defended from the chilling effects of the air.

The STY, situated upon a dry foundation, as well as sheltered above, should be paved at bottom, to the end that it may be kept clean and dry, the operation necessary for which should be daily performed, for although pigs will wallow in the mire, they are yet more thrifty in clean lodgings. As swine confined usually employ their leisure time in demolishing, with their teeth, the wood-work within their reach, the modern cast-iron TROUGHS are profitable; at any rate, wooden troughs ought to be iron-bound. A RANGE of stys is convenient where numbers are fed, on account of the greater facility of attendance, and of distribution of the wash reserved in the cistern.

According to an ancient and general opinion, not, however, entirely supported by either ancient or modern experience, swine do not long succeed, if kept upon the same ground in considerable numbers, infecting each other with a malignant atmosphere. In opposition to such an idea, history informs us, that the Roman feeders possessed herds of swine, to the amount of two or three thousand each; and I have often seen upwards of two thousand large hogs fattened under the same roof, where, in a long course of years, no mortality had been experienced or apprehended. The opinion in question has, most probably, arisen from the circumstance of too great number of pigs bred within confined limits, and a defective ventilation, assisted, perhaps, by a wet or boggy soil, and a want of cleanliness.

PURPOSES IN FEEDING.

These are either for mere domestic use, or for profit by sale; and the choice of plan lies between BREEDING, and purchase of STORES; the former attended with most trouble, but proportionate emolument. Swine are not generally kept to advantage, unless where some waste remains to be gathered, or cheap articles of food can be grown for them; but the rule admits of exceptions in favour of those who are well skilled in the animals themselves, and in the turns of the market. The wash and offals of a moderate kitchen will go a considerable way towards the support of a breeding sow, and in return, the produce of the sow will operate in a comfortable proportion, towards the support of the kitchen. To embrace in our view the profits of the farm and of the public, it has been said, and according to my experience, upon sufficient grounds, that, *an hundred pounds laid out in swine, will return a greater profit, than the same sum invested in any other kind of live stock*; and that no other article of flesh provision can be raised and prepared for market so soon as pork: in consequence, it must be materially instrumental in the production of plenty, and in restraining exorbitance of price in the first necessaries.

CHOICE OF VARIETIES.

For BACON-HOGS in a commercial view, the regular large varieties are doubtless best calculated, as endowed with the important qualification of *growth*, to make use of the technical term, as well as of breeding fat. I readily acknowledge, however, this is an old-fashioned opinion, the large varieties having been not only long out of vogue, but the best of them even out of existence. I remain yet unconvinced.

This property of growth, or accretion in stature, in animals to be fattened, has been of late years slighted, since the fashion has prevailed of confining our attention solely to the consideration of fattening; but on actual experiment, I believe it will be found that, a well-shaped animal, of whatever species, endowed with both properties, will make the heaviest return, and in an article of superior quality, for the quantity of meat consumed.

The best PORK, in course, must be expected from the smallest, most delicate, and fine-fleshed varieties; for example, as has been before observed, those which have resulted from crosses with the southern stock, or with the wild boar of the continent. All our reputed porking breeds have this mixture in various degrees. But I must here put in my plea of objection more strongly, and in the name of good old English ROAST PORK, against the modern principle of sacrificing every thing to fat, and consequently against those breeds, too frequently and deeply crossed with the foreign forms, which produce no lean. In bacon or salted pork, all fat may be tolerable, and even may be preferred by some palates ; but in roasted pork, it is not possible but that a certain portion of lean flesh must be desirable, scarcely a taste of which is to be found in the hinder loins, at any rate of the species under consideration. The little flesh, too, yielded by such pork, is of an inferior greasy quality, and insipid flavour, perhaps necessarily, from being so thoroughly saturated with the fatty material : and should pigs of this description be slaughtered before they have become ripe or fat, their pork will be ordinary, and their weight very short of the profitable standard. On such considerations, the western pigs, chiefly those of Berks, Oxford, Beds, and Bucks, possess a decided superiority over the eastern, of Essex, Suffolk, and Norfolk ; not to forget another qualification in the former, at which some readers may smile, namely, a thickness of the skin, whence the *cracklin* of the roasted pork is a fine gelatinous substance which may easily be masticated; whilst the cracklin of the thin-skinned breeds is roasted into good block tin, the reduction of which would almost require teeth of iron. The western porking breeds make handsome sides of delicate bacon and hams, for superior family use. The eastern pork is however smaller, and perhaps apparently more delicate, than that here described as in reality far superior. The eastern are also the quickest feeders.

BREEDING.

The DURATION of LIFE in the swine, is said by naturalists, to extend to twenty or thirty years, who report that the BOAR continues to grow to the end of the term. Swine are ready for procreation at the age of seven months, but the male is unprofitable for that purpose until twelve months old, and is in his prime at two years. In other respects, the age of swine is matter of small concern, since they are never kept until they are old; and it is the custom with many breeders to slaughter even their most prolific sows in the second year. The young sows to be preserved for breeding, should be chosen with deep and capacious bellies, the full number of teats, and of the most extensive or widest general form. The term of GESTATION in swine is four months, or one hundred and fifteen days, with a very few days variation, producing three litters of from five to twelve pigs each, in about eighteen months, supposing the pigs to be weaned; but in two or three months less time, the pigs being suckled for roasters. Greater numbers to a litter are often produced, more particularly by the China breeds and its crosses, the most prolific of swine: and we had a late instance in Essex, of a sow of that breed, the property of Mr Tilney, of Writtle, which farrowed 301 pigs in 13 litters, out of which she actually brought up 177, or more than 13 to a litter. I have, however, found, and more especially in the large breeds, that a litter of a moderate number is most profitable, since in the numerous litters there are generally several undersized and weak individuals, which never attain much proof. Thus a litter of nine or ten good pigs may bring more profit than a litter of thirteen or fourteen.

After receiving the BOAR, for which the middle of SEPTEMBER and the middle of MARCH are the most advantageous seasons, the sow should be confined until her irritability has ceased, which will return within a few days of her parturition, a sign which demands attention. After she has become heavy, she should be securely lodged by herself, lest others injure her by lying upon her; and, at any rate, during the time of bringing forth, as other swine would devour her offspring as they fell. According to the above breeding periods, the pigs will come in the middle of January and of July; in the first month, with the spring before them, and their nursing mother, in the interim, to defend them from the winter's cold; in the other, they are nurtured in a warm season, weaned in the harvest-field, and then enabled to endure the rigours of the approaching winter. It has proved generally unsuccessful to rear pigs in the winter season, although they may be bred for roasters.

SIGNS of approaching PARTURITION, in addition to the one above noted — swelling of the bags of milk, *decreased* size of the belly, sleepiness. A vigilant swineherd, solicitous to preserve all the pigs, will watch and attend the farrowing sow, day and night, because some sows are so unwieldy, or so careless, as, perhaps at every farrowing, to lie upon, and crush to death, a part of their young; others, from an irregular and vicious disposition, will devour a part, or even all of them. As one precaution, the breeding-sow ought not to be kept fat and heavy, yet in good heart and full strength. Few keepers will, or ever do, go the length of attending the sow, satisfying themselves with the persuasion that she will be safest left to her own care. To those who are willing to undertake such an office, a hamper or basket of straw, will be found convenient, in which to withdraw the pigs from danger when it may be needful, in order to replace them properly, as occasion may suit; which practice it may be necessary to repeat during two or three days, until the pigs shall have acquired strength and caution sufficient to secure themselves. It may indeed be profitable to lose part of a too numerous litter, but accident will not respect the quality of the pigs, and the most puny and worthless may escape. None must be saved beyond the number of teats, and upon an average, NINE is a sufficient number. Would the sow submit quietly, STRAPPING her jaws during the first day and night, with the trouble of releasing her at her meals, would be an effectual security, in case of unnatural voraciousness. As to very numerous litters, our newspaper columns are periodically stocked with triumphant accounts.

The PIGGING-HOUSE should be warm and dry, and secure from the inroads of foxes and other vermin, which have been known to steal sucking pigs from the sleeping or absent sow. Short straw is preferable for a bed, but in not too great quantity, lest the pigs be smothered beneath it; this should be renewed with due regard to cleanliness, and as the unwieldy sow is apt to crush her young against the wall, it is proposed, in the New Farmer's Calendar, to append an inclining or projecting rail, around, beneath which the pigs may escape, on the down-lying of the sow. Sows which are given to devour their pigs, or have teats too large and coarse, or yield too thick and unwholesome milk, should be discarded as breeders, but a small number of pigs at the first litter is no valid objection.

The FIRST FOOD should consist of warm and nourishing wash, whether from the kitchen or dairy, thickened with fine pollard or barley-meal. A portion of strong beer may be added as a cordial, should circumstances render it necessary. The common wash, pollard or meal mixed with water, if scalded, the better. The same diet is proper for the pigs to partake of whilst sucking. The sow can scarcely be too well kept during this period, and in addition to two meals as above, should be allowed a middle one of dry meat; for example, a pint of peas or beans, with half a peck of carrots, boiled potatoes, or the like. Potatoes alone are a poor and watery dependence, nor should pigs be fed with them or any loose vegetable trash, until three months old. The sow may be let out to air herself at pleasure, and after a while with the pigs to accompany her, but never in bad weather.

CUTTING and SPAYING the young pigs, is performed at six or seven weeks old, according to their strength: in a week after which, they may be WEANED. After weaning, shut up the sow closely, feed her well, and on the reflux of the milk, she will express very loudly her desire for the company of the BOAR. It is necessary to repeat, that sows are voracious, and occasionally fierce and savage animals, and have actually devoured young children. The sow is SPAYED whilst she gives suck, and the boar safely CASTRATED at any age.

RINGING the snouts of pigs should be performed at weaning time, and after they shall have recovered from castration. In Cheshire, they cut away the cartilage, or gristle of the snout, in place of inserting a ring, a practice which I have not hitherto essayed.

KILLING. The following extraordinary expedition, particularly for the country, was lately used by Frederic Green, Governor of the Poor-house at Brewood, in Staffordshire. Having betted ten pounds that he would kill, scald, well and completely dress, open, &c, eight pigs in *four* hours, without any other assistance whatever, than having the scalding water conveyed to him as he wanted it. This task he performed in three hours, fifty-six minutes. One of the pigs (surely hogs) weighed 380lbs., and none less than 240lbs., or thirty stones, London weight. Green, however, had the advantage of a windlass to draw the pigs out of the scalding tub.

STORE-FEEDING AND MANAGEMENT.

WEANLINGS should have, at least, one month of delicate feeding, warm lodging, and care. The same kind of food should be continued to them three times a day, to which they were at first accustomed with the sow. Corn and pollard are indispensable in pig feeding; they may, indeed, be reared more cheaply, but not then so profitably; and the breeder who sagaciously plumes himself on the *hardiness* of his stock, of whatever species, will not always have to boast of form, size, and good plight, into the bargain. On the other hand, it is readily acknowledged, that the round and barrel form of a pig, making all fat, is most cheaply maintained, and the soonest ripe.

GROWING STORES and sows are fed through the winter with the run of the barn-yard, upon roots of all kinds, including ruta baga and mangold, cabbage, &c, a ration of corn of some kind being allowed, with wash. Meal of any kind — bean, pea, oat, barley, rye, buck-wheat, or tare, and linseed, boiled with potatoes, make good wash. Pea-wash alone scours young pigs. Pulse, or corn of any kind, are advantageously given in the straw to pigs, which are good thrashers. In autumn, and a plentiful season, swine will subsist themselves abroad upon acorns: in summer, upon clover, lucern, or tares; but very young pigs particularly, ought not to be left abroad in continual rains, and will always pay for a daily moderate feed of old beans with the clover. Swine turned to shift upon forests or commons, are apt to stray and hide themselves for a considerable time; the ancient and ready method to collect them, is by the sound of a horn, with which they have been accustomed to be fed. Where a considerable herd is kept, and they are shifted upon the waste, they should be attended by a boy to prevent trespasses.

FATTENING FOR PORK AND BACON.

Pigs will FATTEN either in confinement or at large in the yard. When in stys care should be taken that the pigs be all *ringed*, or they will not lie quiet; also that, when a number are fed together, any one at which the rest may have taken a distaste, be immediately withdrawn, or in probability they will tear him to pieces. For the same reason, a stranger should never be introduced. The fewer together, the more quietly and speedily they fatten, and by consequence, they succeed best singly. The troughs with SLIDING BOARDS before the meat, giving way to the snout of the pig, and shutting on his withdrawing his head, generally used in Hants and Berks, greatly prevent waste. They used, I recollect, to be provincially denominated *witches.*

WEANLINGS are fattened for delicate pork, chiefly in the dairies, where they are made ripe in a few weeks. Generally a pig of five or six months old will be fattened in seven, or eight, or twelve weeks, dependent on his condition. Small bacon hogs will be fattened in twelve weeks, the larger in sixteen to twenty. They should be kept perfectly clean, dry, and comfortable, for which daily attendance is necessary; and it is preferable, where time can be spared, to feed thrice in the day. The most correct feeders, and those largely concerned, endeavour so to apportion the meal, that the trough may be entirely cleared, and yet the appetite of the animal thoroughly satisfied; a plan which has been proved in a thousand examples to fatten the most speedily, and make the fattest hogs: so totally opposite, nevertheless, to the ancient and still too common country method of filling the troughs at every feeding hour, whether empty or not. I have witnessed an old farmer repeatedly urging his servant to the performance of this duty, whilst the hog-trough remained constantly replenished with a mingled mess of meal and dung, of equal use to the hogs to lie and wallow in, as to feed upon. To speak guardedly, I have no doubt that, in former days at least, one bushel of corn in three, has been in this mode converted to dung, without ever having entered the bodies of the animals. Two or three years since, a farmer published the following experiment, as an improvement of the established mode of pig feeding. He took two pigs of the same litter, and of equal weight, and fed them apart, one in the usual way on barley-meal mixed with swill, the other ate his meal dry, and had his drink given him an hour afterwards. At the end of six weeks, both hogs were weighed, when the one fed on dry food was a stone heavier than the other! The reader will judge whether this difference arose from the constitutional superiority of the heaviest pig, or the superiority of the new mode of feeding. Experiments on the point may be easily made.

Various articles for FATTENING swine.—Skimmed milk, and pea, oat, or barley meal, rank first in point of excellence with respect to the quality of flesh, milk-fed pork being superior to any other description, not only in delicacy of flavour, but in substance and weight, none weighing so heavy in proportion as the milk-fed animal. Hence the bacon of the dairy counties is superior. Milk will fatten pigs entirely, without the aid of any other food, a practice sometimes in the dairies.

CORN-FED pork is next in value, PEAS, OATS, and BARLEY being the best adapted grain. BEAN-FED pork is hard, ill-flavoured, and indigestible; being potatoe fed, it is loose, insipid, weighs light, and wastes much in cookery.

CLOVER-FED pork is yellow, unsubstantial, and ill-tasted: fattened on ACORNS, it is hard, light, and unwholesome; on OIL-CAKE, SEEDS or CHANDLERS' GRAVES, it becomes loose, greasy, and little better than carrion; on BUTCHERS' OFFAL, luscious, rank, and full of gravy, but of a strong and disgusting scent.* Compared with the general consumption of pork, the real DAIRY-FED meat bears a very small proportion, and the sale of it in the metropolis is in comparatively few hands, always commanding a superior price. In some parts of France they SKIN their pigs intended for fresh meat.

A pig will eat two or three PECKS of corn or meal per week, in fattening; a hog upwards of a bushel, in proportion to his size. The following is an example of successful feeding. 'In the spring of 1805, Mr Ivory of Whitchurch, Salop, killed a hog of two years old, one side of which weighed 410lbs. the other 414lbs.; total 46 scores 14½lbs. or about 111 stone, dressed country fashion. He was purchased very lean at two years old, price four guineas, was fattened in between seven and eight months, and then valued at eighteen guineas; subsequently, twenty-five guineas for him were offered and refused.' This hog probably made upwards of thirty pounds at the then price, and might have consumed full forty bushels of corn.

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* Store pigs, however, may be fed on almost any sort of food which they will eat, and thus acquire growth, and then for six weeks or two months before they are slaughtered they should be fed on grain and milk, which will harden and give flavour to the pork.

Swine should not be kept in close and filthy pens. Though they wallow in the mire, their object is coolness not nastiness, and they thrive faster, and enjoy better health when allowed clean and dry lodgings than when they are not thus accommodated. The late Judge Peters, of Pennsylvania, in an article entitled '*Notices for a Young Farmer*,' &c, observed that 'There is no greater mistake than that of *gorging* swine, when first penned for fattening. They should, on the contrary, be moderately and frequently fed; so that they be kept full but do not loathe or reject their food; and in the end contract fevers and dangerous maladies, originating in a hot and corrupted mass of blood. In airy and roomy, yet moderately warm pens, paved and boarded, and often cleaned, they are healthy and thriving. They show a disposition to be cleanly, however otherwise it is supposed, and always leave their excrementitious matter in a part of the pen different from that in which they lie down. No animal will thrive unless it be kept clean.'

The same writer asserted that fatting hogs should always be supplied with dry rotten wood, which should be kept in their pens, for the animals to eat as their appetites or instincts may direct. It has been supposed, likewise, that swine thrive better when they can obtain fresh earth, which they are often observed to swallow with greediness. Charcoal, it is said by some, will answer as good if not a more valuable purpose ; and that if swine can obtain charcoal, they will not only greedily devour a portion of that substance, but will be but little inclined to rooting, and remain quiet in their pens.

The modes in which swine are fattened in some of the western parts of New York are stated to be these : 'About the first of September, begin with boiled potatoes and pumpkins, mashed together with a little Indian meal, ground oats and peas, or other grain stirred into the mixture after it cools. From two to four weeks before killing time the food should be dry Indian corn and clear cold water. Mr Yongham fattens his hogs in a large yard or field, with a shelter in it to which they may retire to sleep. But elder Turner says hogs should never know what liberty is; but should be kept close all their lives, and as inactive as possible. That with this method double the quantity of pork can be produced with the same expense of food.*

Rubbing and currying the hides of swine while fattening conduce as well to the thriving as to the health and gratification of the animals. It will be well, likewise, in every sty to place a strong post for them to rub against. During the time of their fattening they should have plenty of litter, which will be a double advantage, providing for their comfort, and increasing the quantity of manure.

There is a great advantage in boiling, steaming, or baking all sorts of food given to swine. The last American edition of Willich's Domestic Encyclopedia informs that a 'Mr Timothy Kirk, of Yorktown, Penn. fed one pig with boiled potatoes and Indian corn, and another with the same articles unboiled. The two animals were weighed every week, and the difference between them was as 6 to 9. The same experiment was continued several weeks, and the animals alternately fed on boiled and unboiled food, with a uniformity of result, which sufficiently showed the very great profit arising from boiled food.'

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* Memoirs of the New York Board of Agriculture, vol. ii, pp. 39, 40.

A writer in the N. Y. Farmer for Nov. 1829, with the signature A. E., states, in substance, that Mr William Canfield, of Schodack, Rensellaer county, N. Y., owns an orchard, wholly grafted with sweet apples, in which he kept his hogs most of the summer season, where the grass and a little whey were sufficient to promote their growth. About the time when hogs always manifest a disrelish for grass, the worm eaten apples began to fall, sufficiently matured to become eatable. As they advanced in size and ripeness, they became more and more agreeable and more nutritious, until the hogs began to fatten rapidly on no other food. The trees were therefore shaken or beaten with light poles, so as to throw down a due quantity of the most ripened fruit. This process was continued until the whole herd was become sufficiently fattened. Then Indian corn was given in about half the common quantity for about one week, and full feeding of it another week. This brought them to the butchering, and the pork was not inferior to that which is fattened in a more expensive manner. One full grown tree, (or two inferior ones), was found sufficient for a hog weighing 250lbs.

A writer, whose communication was published in the N. E. Farmer, vol. v, p. 82, states as follows:

'I have tested by ten years' experience, the value of apples as food for animals. I keep five or six hogs in my orchard, upon nothing but apples and a little swill; and have uniformly found them to grow and gain flesh faster than hogs fed upon anything else, except grain. On the first of November they are very decent pork; after which I feed them about six weeks on grain before I kill them, and I believe I have as fat hogs and as good pork as my neighbours, who give to their hogs double the quantity of grain that I do to mine.'

An English writer says, 'swine will fatten much faster on warm than on cold food.' Corn and cold water will make them healthy, but warm beverage is considered as requisite to a quick growth.' Some English farmers keep two or three little store pigs in the fatting sty. While the fatting hogs are taking their repast, the little ones wait behind them, and as soon as their betters are served, lick out the troughs.

'Besides the advantage of having by this expedient no waste nor foul troughs there is another. The large pigs rise alertly to their work, lest the small ones should forestal them; and fill themselves the fuller knowing that they have it not again to go to.

'The disadvantage of this practice is, I understand, the large ones are apt to lord it too much over the little ones, especially in a confined sty. If, however, they had a separate apartment assigned them, with an entrance too small for the fatting swine to follow them, this disadvantage would be in a great measure remedied.'

Carrots, according to Arthur Young are better food for swine than potatoes, and some other writers assure us that parsnips are better than either for feeding them. An English writer asserts that 'they fatten all their pork in the island of Jersey with parsnips. They are more saccharine than carrots, and it is well known that nothing fattens hogs faster, or makes finer pork than the sugar cane.'

Mr Young asserts that 'the most profitable method of converting corn of any kind into food for swine is to grind it into meal, and mix this with water in cisterns, in the proportion of five bushels of meal to one hundred gallons of water, stirring it well several times a day, for three weeks, in cold weather, or a fortnight in a warmer season, by which time it will have fermented well and become acid, till which it is not ready to give to the swine. The mixture should always be stirred immediately before feeding, and two or three cisterns should be kept fermenting in succession, that no necessity may occur of giving it not duly prepared. The late Judge Peters, formerly President of the Penn. Agr. Soc. also asserted that 'sour food is most grateful and alimentary to swine. One gallon of sour wash goes farther than two of sweet.'

Some sentiments, however, which are apparently in opposition to the opinions of the above celebrated agriculturists have been advanced by other writers. An English work, called '*Farmer's Calendar*,' author's name not given, declares that much has been said, and little understood about *purposely* souring food for hogs. It is not that acidity can possibly tend to making fat, but it is found that pigs will readily fatten upon sour or rather acescent food, a sweetish taste and glutinous quality succeeding fermentation; and that they will do still more readily on such as never reached the acid state I know, and have seen in hundreds of instances.'

In order to reconcile these writers it is only necessary to advert to the different stages of ordinary fermentation, and the products of each stage. The first stage of fermentation produces sugar, and is called the saccharine fermentation. The second stage developes alcohol, [spirit of wine], and is called the vinous fermentation. The third produces vinegar, and is called the acetous fermentation; and the fourth and last stage converts the matter fermenting into a substance, which is not only offensive but poisonous, and is called the putrid fermentation. Thus, if you soak wheat or other farinaceous substance in water, of a proper temperature, it will first begin to sprout or vegetate ; it will next afford spirit or alcohol ; — continue the process the wash turns sour, at first slightly and then more strongly acid ; and at last the whole becomes putrid. It probably contains most nourishment when it is sweetest, but is valuable till very sour, when it is worth but little or nothing ; and when the putrid fermentation has commenced it is worse than nothing as food to any animals. The wash, then, should be given to the hogs while it is yet sweet, or but beginning to be sour.

Cobbett recommends keeping hogs till they are more than a year old before they are killed. He says, 'the flesh is more solid and more nutritious than that of a young hog, much in the same degree that the mutton of a full-mouthed wether is better than that of a younger wether. The pork or bacon of young hogs, even if fattened on corn, is very apt to *boil out*, as they call it ; that is to say, come out of the pot smaller in bulk than it goes in. When you begin to fat, do it by degrees, especially in the case of hogs under a year old. If you feed *high* all at once, the hog is apt to *surfeit*, and then a great loss of food takes place. Make him *quite fat* by all means. The last bushel, even if he sits as he eats, is the most profitable. If he can walk two hundred yards at a time, he is not well fatted. Lean bacon is the most wasteful thing a family can use.'

Other agriculturists, however, express a different opinion from that of Mr Cobbett with regard to the time which hogs should be kept on hand before they are killed. Mr Featherstonhaugh, (in *Memoirs of the New York Board of Agriculture*, vol. i, p. 332), says: 'Farmers differ much in their plans of holding stock for pork; some permitting their shoats to run at large eighteen months till they are penned up to fatten; this is the most troublesome and the least profitable way; others give them a range in clover pastures, and begin to fatten them earlier. I apprehend there is a much more profitable way, and attended with less trouble for those who have the right breed. According to the quantity of pork wanted should be the number of breeding sows kept over, and there should be no other hogs on the farm, [that is kept over winter] but the breeding sows. These, when they pig the latter end of March, should be fed in the most attentive manner, with swill and shorts. The pigs from a full grown sow will generally be twelve in number; these should be thinned down to eight, and as soon as they begin to feed freely out of the trough should be weaned and afterwards fed regularly with green tares, clover, boiled potatoes, ground peas, unmerchantable corn, or any other nourishing food ; turning them out every day into a small yard, where there is a shallow pond for them to lie in.

In the county of Rensellaer, N. Y. some farmers assert that March pigs, killed about Christmas, are the most profitable for pork.' Others say, 'Pigs ought never to come till June ; for the cost of earlier pigs exceeds the profit.' And further, we learn that the methods proposed for fattening hogs by the different farmers in that county are very various. Some recommend keeping hogs in pastures, with some slops from the dairy, &c, till near the last of August — some say a little later. All agree that near this time they manifest a disrelish for grass. Small patches of peas, or even of corn, will then be convenient to turn them into for a few weeks.

THE DISEASES OF SWINE.

Little success has hitherto attended the *doctoring* of swine, which are the most stubborn and intractable of patients. Thence, PREVENTION is the only remedy deserving of any considerable share of the keeper's attention. This should chiefly extend to the avoidance of infection by foul air, of damps and cold, and of the extremes of either starving or gorging the animals. Sulphur and madder are the best alterants, in foulnesses of the skin or habit. In the SWINE POX, the same medicines in small quantities, with treacle in the wash, fresh brewers' grains, or sweet pollard, the stys being well ventilated, or the animals aired abroad. Inflammation of the lungs, or HEAVINGS, seem to admit of no remedy, and is sometimes found to be constitutional or hereditary in swine. When the EARS of swine crack, and become scabby in the field during the summer heats, they should be frequently anointed with tar and lard.

Four or five and twenty years ago, the late Mr Tattersall requested of me to choose him a store pig to put up for fattening. I applied to Mr Wyat, the then salesman, and we chose one at Finchley, out of a-fine drove of *Herefords*, not then out of fashion. After the hog had been at Mr Tattersall's two or three days, I received a letter from him to tell me it was taken very bad, in fact, dying. On inspection, I found the animal sleepy and torpid, refusing food, but occasionally throwing up the contents of its stomach, which consisted of half-digested meal. I immediately perceived the cause of the patient's malady. The feeder, determined to lose no time, had been assiduously filling the trough with food, which the hog, empty after a long jorneuy, voraciously devoured until its stomach was filled, and its digestive faculty totally overpowered. My prescription was abstinence from corn, a moderate quantity of sweet grains, thin wash, sulphur with it, and in a few hours the hog was perfectly recovered. In the sequel, the feeder held up his hands with astonishment, at the possibility of a hog being gorged with food!

I have been favoured by a very old friend with the following successful and instructive case, which I give from the MS. received: 'In the autumn, 1828, one of my sows, four years old, a good mother, remarkably good tempered, a cross between the Oxford and China breeds, with eleven fine pigs by her side, which had been farrowed three weeks, was suddenly seized with fever and inflammation. In twelve hours she became unable to stand, was very restless and apparently in great agony, no evacuation having taken place during two days. In consequence, I called in the aid of a noted cow-leech of the vicinity, who with much gravity promised me—he would do what he could for her, but that all would be of no use. The operations of bleeding, anointing and medicine were carried on for three days, at a charge of thirty-five shillings, when the sage doctor dismissed the case with the consolation to me, that—he could do no more for the patient, and that it was impossible she could live.

'I then took her in hand myself, bled her and gave her a strong dose of salts and jalap, which I succeeded in delivering, her jaws being held open by a rope attached to each. In about an hour thereafter, she had three pints of warm gruel. In less than three hours, I had the satisfaction of observing symptoms of great tranquillity and improvement in my patient; and after leaving her at night on a clean and comfortable bed, I was gratified by finding her upon her legs the next morning, in a fair progress to recovery. I then repeated the above dose, somewhat reduced in strength, and still keeping her on warm gruel two days, my satisfaction was complete, on finding her quite restored to her former health, saving a little inconvenience from the obstruction of her milk. Of the pigs previously removed, nine did well, and the sow became freed from all relics of her disease in ten or twelve days. I did not choose to risk another farrow with her, therefore put her to the boar in October, and fed her for the knife. She was killed at Christmas, and made excellent bacon. Thus I saved a fine hog by calling in Doctor Common Sense, to atone for the insufficiency of the most skilful *leech* then and there going; and if my brethren, pig-breeders and feeders, would follow my example, in most cases, I humbly opine, it would be to the benefit both of their pockets and their pigs.'

Mr Lawrence, an eminent English agricultural writer, says: 'When the hog lies upon his belly, and contracted, it indicates a sense of cold, or some indisposition. If inaptitude to thriving be attributed to a foul, scurfy, and obstructed hide, the best remedy is to extend the hog on a form, and wetting him with a ley, made of half a peck of wood ashes boiled in urine, or salt water, [soap suds will answer] to curry or scrub him clean; then to wash in clear warm water, and dry him with wisps [of straw] strewing him over with ashes, and putting him into a deep straw bed. When pigs have gorged themselves, and blunted their appetites, give to each two table-spoons full of sulphur once or twice a day, or in cases of great heat, equal parts of cream of tartar and nitre, and in a day or two they will recover.'

THE STAGGERS. Swine afflicted with this disorder suddenly turn round rapidly, and if not assisted will die in half an hour. On opening the mouth a bare knob in the roof of it will be discovered, (say some writers, though others say the said knob is not always visible), cut it and let it bleed. Take the powder of loam and salt, rub it with it, and then give the hog a little urine.

A writer for the N. E. Farmer, vol. vii, p. 1, says that he lost two swine from ignorance as to the cure of this disease; but by cutting off the tail and ears of the animals, as the easiest way of bleeding them, giving them strong doses of castor oil, and turning them out of the sty into the pasture, he succeeded in saving them. Sometimes they have relapsed, but have been restored again by being turned out. But they do not soon come to their appetite, and the disease materially and for a length of time retards their growth. The cause of this disorder has not, so far as our knowledge extends, been discovered.

Gargut is an inflammation of the udder, by being filled with coagulated milk. It chiefly happens where sows are too fat at littering; and when they are thus affected the pigs will not suck. In slight cases the udder may be bathed with camphorated spirits of wine; but the milk must be squeezed out by hand if possible. If relief cannot thus be given, it is best to kill the animal.

Measles. This disorder is mostly in the throat, which is filled with small pustules, and sometimes these appear on the outside of the neck. The animal affected looks languid, with red eyes, and loses flesh. *Cure.* — Give the patient small quantities of levigated crude antimony in his food. Brimstone, occasionally mixed with his food, will sharpen his appetite and accelerate his fattening as well as prove a preservative against measles.

Mange. This, like the scab in sheep is a cutaneous disorder, occasioned by want of cleanliness. It is known by the violent rubbing of the animal, till he tears the pustules, and thus produces scabs. The cure, as directed by Dr *Norford*, is first to wash the animal well with strong soap suds; then anoint him with an ointment formed of an ounce of flour of sulphur, two drachms of fresh pulverized hellebore, three ounces of hogs' lard, and half an ounce of the water of kali (*alkaline solution*). This is to be rubbed in at one time, and is sufficient for an hog weighing an hundred. If properly applied no repetition will be necessary, if the hog be afterwards kept clean. Where he has a slight cough, he directs doses of antimony, from half an ounce to an ounce and an half, according to the size of the animal, to be finely pulverized and mixed with his food for ten days or a fortnight. But where from long neglect the neck, ears and other parts become ulcerated, they should be anointed every third or fourth day with an ointment made of equal parts of tar and mutton suet, melted together, till the cure is completed.

The murrain, or leprosy in swine is known by the shortness and heat of the breath, hanging down of the head, staggering, and secretions from the eyes. It is said to be caused by hot seasons, when the blood becomes inflamed. *Remedy.* —

Boil a handful of nettles in a gallon of small beer; add half a pound of sulphur, a quarter of a pound of flour of anniseeds, pulverized, three ounces of liquorice, and a quarter of a pound of elecampane; and give this mixture in milk, at six doses.

DRY COUGH, and wasting of the flesh is best remedied by a dry warm sty, and a regular supply of food that is calculated to keep the animals cool, and allay the irritation of the lungs.

FEVER OR RISING OF THE LIGHTS seems to be caused by over feeding; and may be removed by doses of sulphur and oil.

SECTION XVII.

The Milch Cow.

THE *genus* bos, commonly called *neat*, and sometimes *black cattle*, stands at the head of our domestic animals destined for the use and food of man; and more especially for that most precious alimentary production, MILK, of such importance in rearing our children, and adapted to such a variety of other family purposes. For a constant supply of this invaluable resource, we depend on the female of this race, the harmless and docile cow, which is compelled to produce and part with that secretion, intended by nature for the support of her own progeny.

Our neat Cattle are divided into various breeds or races, each distinguished by peculiar qualities, the most important of which are the natural propensity to breeding milk, or making beef; with the former of which lies our most material business. The English *milky* breeds chiefly are—the *Lancashire and Midland County* LONG-HORNS—the *Yorkshire*, or Holderness SHORT-HORNS—the *Suffolk* DUNS—the *Natt*, or hornless *Red Devons*. In *Scotland* the AYRESHIRE and the famous DUNLOP COWS—

the *Fifeshire* and *Orkney* — *Homebreds*, or mongrels, to be found in all parts, many of which prove useful dairy cows, — the *Alderney*. The long-horned breeds generally excel in the quality, the short-horned in the quantity of milk, individuals of the Holderness cows having been known to produce the enormous quantity of nine, and even ten gallons in a day. Such great milkers must necessarily afford but a thin fluid, not so well adapted to the butter-dairy, as to the sale of the milk, excepting with respect to that material branch of the dairy business, pig-feeding. The signs of productiveness of milk in the cow are generally — 'a thin head and neck, clean chaps, free from leather, deep and rather flat carcass, wide hips, the bones perhaps inclined to be pointed, capacious udder, and large plain milk-vein; the last two signs worth all the rest.' — *New Farmer's Calendar*.

The next considerations for a private buyer, are, SELECTION, and the means within his power to make it. These will depend materially on his situation, and whether his aim be to obtain something capital in this way, or to be content with the choice offered him by the markets or fairs of his vicinity. In the former case, his only method is recourse to some salesman or jobber, on whom he can depend, to supply him with a milch beast of the highest reputed established breed, for which he must expect to allow a proportionate price. Should he prefer to take pot-luck nearer home, let him beware of relying on his own judgment solely, unless that be very mature, for cow-jobbers and horse-jockeys have ever been cater-cousins; and I, who have considerable experience of them both, have never seen the least symptoms of their probable degeneration. He ought to be reminded, also, of another fact, lest his expectations should be too sanguine; it is, that great and deep milking are sufficiently rare, even in our most milky breeds, and that among cows, great milkers are about as scarce as good horses. Indeed, this produce is so extremely valuable, that a constant great milker is worth almost any price, will amply repay the highest expense of keep, and should be kept to the latest period of her age, should her milking continue. On the other hand, no cow should be kept beyond the period of good milking, but should be immediately replaced by a young and fresh milker.

It will immediately occur, that a single cow cannot possibly yield a sufficient annual supply of milk and butter for a family, however small; both on account of the necessary decrease of produce, as she advances in her pregnancy, and of the period in which it will be proper for her to go dry. *Two* cows will therefore be necessary for even a moderate family, and any surplus produce of this kind always finds a ready disposal. The second cow may be purchased at convenience, with respect to time and need of her in the dairy.

SIZE is a matter of importance which must be regulated by the quantity and nature of the keep, which a proprietor may have at command. If he have a sufficient range of good grass-land, in course, he can afford to keep the largest breed of cows; but if he possess but little, and ordinary grass, or intend to shift his cows upon a common, he must make choice of small stock, which will shift with a moderate bite, and are not too heavy to labour through the day in order to fill themselves. However, on such provision only, excepting perhaps at the height of the season, the smallest heath-croppers, even if good milkers in proportion to their size, will make but a poor figure in the dairy, without a good allowance of extra provision.

Inexperienced persons often suffer loss and disappointment, by purchasing a stale milker, perhaps an old and worn out cow, from some neighbouring dairy, by the disposal of which the seller is much accommodated. It is generally most advantageous, to have a fresh five-year old beast in full milk, that is to say, with her calf a few days old by her side, or she nearly ready to calve. The calf may be either immediately sold as a suckler, suckled at home for the butcher, or reared, according to circumstances; but the first method is doubtless the most profitable, milk, butter, and pork, being articles of the greater worth and convenience. If a small, common-bred, low-priced cow be the object, no other consideration is necessary than her health, age, and milky indications, particularly that she have large *tackle,* in plain English, a capacious udder, and that she be a *quiet* milker. This last is a matter of some consequence, since it is not quite sufficient that a cow produce a large quantity of milk, unless she will also render it quietly, and suffer you to take it away. The sooner a cow is milked dry after purchase, the better, since they are invariably *stocked* for sale; that is, their milk is suffered to remain perhaps two days, in order to distend the udder to the utmost, by way of recommendation: a cruel and absurd trick, by which these animals are tortured, and many of them annually ruined, from inflammation of the milk-vein, and *coring* of the distended parts.

As to a CHOICE of BREEDS for a private family, none in England, probably, combine so many advantages as the *Suffolk* dun-cows. They excel both in quantity and quality of milk; they feed well after they become barren; they are small sized, and *polled* or hornless; the last a great convenience. The horns of cows which butt and gore others, should be immediately *broad-tipped.* There is a breed of polled *Yorkshire* or *Holderness* cows, some of them of middling size, great milkers, and well adapted to the use of families, where a great quantity of milk is required, and where price is no object, and food in plenty. If richer milk and a comparison of the two famous breeds be desired, one of each may be selected; namely, the last mentioned, and the other of the Midland county, or long-horned species. Colour is so far no object, that neither *a good cow nor a good horse can be of a bad colour;* nevertheless, in an ornamental view, the *sheeted* and *pied* stock of the *Yorkshire short-horns,* make a picturesque figure in the grounds. The *Alderney* cows yield rich milk upon less food than larger stock, but are seldom large milkers, and I believe, are particularly scanty of produce, and tender in the winter season.

It is pre-supposed that a dry and comfortable COW-HOUSE has been provided, containing a stall or two, and a *calf-pen,* and it is recommended, in the *General Treatise on Cattle,* to confine the hinder legs of a cow, whilst milking, as well as the head, the former of which is most securely effected by two stumps of wood fixed in the ground, to which the hinder legs may be strapped. They who aim at perfect security, as nearly as that may be obtained, will perhaps be induced to make it a rule, never to milk a cow with her head and legs at liberty; but most, as has always been the practice, will incline to put confidence in the quiet cow; many such, however, have I seen accidentally kick down a swimming pail of milk, and that may very probably happen when the article, being scarce, is of the most consequence — the unfortunate attendant, male or female, then marches into the house, with a grave step, a long face, an apology, and an empty pail.

The provision of FOOD for the cow must be looked upon as the prime concern in the dairy business, for such a constant daily draught upon the animal juices cannot be answered, but by aid of the most ample supply, even to satiety, of nutritious and succulent victuals; not that, according to the absurd notions of many persons, keep regulates and equalizes milking, be the breed whatever it may, since in some breeds, the keep turns to milk, in others to beef; but because the truest and largest milker will very soon lose that precious faculty without proportionate, that is to say, high feeding. Keep short and meanly, and your milk and butter produce will be in exact proportion, and the cow, when dry, emaciated and of little worth.

A farmer, some years since, kept eighteen cows upon a common, and was often obliged to buy butter for his family. The common was inclosed, and the same person supplied his family amply with milk and butter, from the produce of four cows well kept.

Great Milkers seldom carry any flesh upon their bones, and are perhaps as seldom made fat, but they pay as they go, and never retire in our debt. The difficulties in cow-keeping are these — the expense of their food is considerable, more especially with respect to any which must be purchased, and if the produce be inconsiderable, it may be a losing concern. You may be feeding a sparing milker into flesh, and if you stint her, or allow only ordinary food, you get neither flesh nor milk.

Amateurs in this line should procure the largest milkers, and I had almost said give them gold, could they eat it. In this case, it may be depended on, *milk is always of more value than the best cow-food*, which is the *jit;* and a cow, the natural tendency of which is to breed milk, will convert all nourishment, however dry and substantial, into that fluid ; in fact, will require such solid kind of nourishment, to support her strength, and stimulate her to procreation, in which otherwise, great milkers are very apt to be deficient, and frequently to miss their *bulling* at the proper season. But should grain be allowed, oats are the most proper; they should be ground or bruised, and moistened with water, as the cow would otherwise swallow the oats whole, which would not only fail in giving nourishment, but might be productive of obstruction and disease. Fine pollard also, moistened or mashed, is a nourishing food: the milch cow, however, should always have exercise, and it is more especially necessary, when extraordinary and substantial food is allowed.

Another great object for our *crack* cow-master and lady of the snug rural mansion, is to have milk, cream, and butter, in a generous abundance and high quality, throughout the winter, as well as the summer season; and of these, if they will take care enough to walk in our old and well trodden paths, they shall not fail. The method is by contriving to have a fresh milker in the winter, with an ample store of the best provisions for the season.

SUMMER FEEDING: and let it always be recollected, that *economy* is the leading feature of our plan. Natural grass is the first and best of all food for our domestic animals. Of the artificial grasses, *lucerne* stands first, and green tares are a very succulent and nutritious food for Milch Cows. The saving method of managing grass, and it will be found excellent economy where the proprietor may have only a small close or two, is to keep it constantly shut, and free from the tread of the cows, and to cut the grass as soon as of sufficient length and substance, and carry it to them; no more being cut at once than can be consumed in a day, the cutting being made in the morning. This to continue throughout the season, and as late in autumn as any growth can be obtained.

According to Mr Curwen's experience, some years since, three acres of grass cut and carried, supplied thirty milch cows with two stone each, or twenty-eight pounds, during two hundred days. He observes that, to have supplied them with two stone of hay each, during the same period, would have required seventy-five acres of land for its production. And to have grazed such a number of cows at liberty, that length of time, it is obvious, must have taken a very considerable number of acres. To enable the meadow to support this exhaustion from the scythe, it should be cleared at the end of every autumn, from all kinds of weeds and rubbish, and fresh grass seeds of the best kinds, cast upon the bare places. A coat of good manure should be then allowed, consisting of all that can be collected from the household, or procured elsewhere, mixed up and augmented with virgin earth. The garden will assist with its superfluity in feeding the cow, and lettuces, as a change of diet, will help to force the secretion of milk. Should the green food scour the cow, a small quantity of good hay must be allowed daily.

The few advocates for the ECONOMICAL mode of feeding cows, always direct them to be kept entirely in the house, both summer and winter, a practice to which I have strong objections, not only on the score of the animals' health and comfort, but that I have always experienced exercise abroad to increase the quantity of milk. Thus the cows may be turned upon the common waste, to remain or come home at their liberty, being fed to the full, with cut grass, morning and evening, with the constant caution of allowing them shelter in the fly season. They may lie abroad during summer nights, in a well-littered yard, or secure waste, a sufficiency of cut grass being at their command. Pure water is of great consequence to the health and productiveness of the cow. If one beast *drive* the other, always at feeding times tie up the mistress.

WINTER-FEEDING. The chief dependence for cows is *rowen*, or after-math hay. This must be either grown at home, or purchased. It is a piece of extravagance to allow a good milch cow dry straw, *because milk is worth more than hay;* but should the necessity exist of using straw, none other is fit than *oat* straw. ROWEN, or after-math is generally supposed to force milk, but in poor pastures perhaps the first crop may be preferable; and I have lately been informed by a London cow keeper, a good feeder, that he has discontinued giving rowen to his cows, finding the best hay most profitable. CARROTS are an excellent winter food, indeed the best of the root kind; MANGOLD OR BEET also, affords a plentiful supply; which last, however, must be dispensed with caution, cows having been *hoven* by it. If POTATOES be given to cows, they should be steamed or baked; those who venture to give them raw and mashed, should allow hay with them, as in the raw state and freely dispensed, they seldom fail to bring the scouring rot on cows. Bruised FURZE-TOPS are very good, and help to make capital winter butter. CABBAGES may be given moderately, but TURNIPS make thin milk and bad butter, in spite of all the nostrums which have been recommended as preventives. The miserable practice of giving OIL-CAKE to cows, insures greasy, unsubstantial, ill-scented butter, and has a similar effect on veal. When substantial food appears necessary, a daily moderate feed of oats broken, or fine pollard, moistened with water, is most proper.

With the two cows in full milk, may be kept well, a BREEDING SOW, or two or three young PIGS; and should the proprietor desire a specimen of the finest milk-fed pork, he may feed a pig upon skimmed milk, with the addition of a very small quantity of barley or pea-meal, making it thoroughly fat in two months.

MILCH BEASTS should never be exposed by NIGHT to the inclemency of the winter season, which chills them, and dries up part of their milk, keeping them backward in all beneficial respects. At any rate, they should have a well-littered shed, in which they may repose in comfort, and with their *loins* dry — a matter of great consequence to their health.

The ANNUAL CONSUMPTION of food per cow, of grass and hay, if turned to grass, is from one acre to an acre and a half of pasture in the summer, and from a ton to a ton and a half of hay in the winter. A cow may be allowed two pecks of carrots per day. The grass being cut and carried, will economize it full one third.

The ANNUAL PRODUCT of a good fair dairy cow, — during several months after calving, and either summer or winter, if duly fed and kept in the latter season, she will render an average of seven pounds of butter per week, from five to three gallons of milk per day. Afterwards, a weekly average of three or four pounds of butter from barely half the quantity of milk. It depends on the constitution of the cow, how nearly she may be milked to the time of her calving, some giving good milk until within a week or two of that period, others requiring to be dried eight or nine weeks previously.

I have heard of truly wonderful quantities of butter, made from the milk of a single cow in seven days; but I have never been fortunate enough to obtain one that would produce more than twelve pounds per week, although I have had a Yorkshire cow which milked seven gallons per day, yet never made five pounds of butter in one week. In 1790, residing at Sudbury Green, near Harrow, a servant whom I had from a farmer in the neighbourhood, informed me of a long-horned cow on that farm, from the milk of which given in seven days, was weighed twenty-two pounds of butter: and in the present year 1829, Mr Joshua Salt of Lounsley Green, near Chesterfield, has a short-horned cow that milks upwards of twenty-one quarts daily, from which three pounds of butter are churned, making twenty-one pounds of butter weekly, sixteen ounces to the pound; she calved in Chesterfield race week. On the average, three gallons of good milk will make one pound of butter.

The DAIRY must be the seat of the most exquisite and punctilious cleanliness, in every part of its management. *Hence all sluts, snuff-takers, and daudles — away to the dust-hole and cinder-heap!* — a proper inscription to be placed in an advantageous light. The room must be airy, and both glazed and latticed, and floored with flag-stones or broad brick. Lead is dangerous, and well-glazed earthen pans are the best and most convenient receptacles for milk: these must be scalded perfectly clean, outside and in, beside being frequently boiled in a copper conveniently posited, well scrubbed with a brush, and rinsed in plenty of clean water. Milk should be set immediately: if the weather be cold, put warm water at the bottom of the milk pan; if warm, cool the dishes previously with cold water. Skim off the cream, in summer every twelve, in winter every twenty-four hours. Shift the cream into clean pans daily, in winter; twice a day, in summer; generally stirring it several times a day, with a clean wooden spatula. To make fine butter, cream should be churned within three days, in hot weather. In severe frosts, it is best to churn the *whole of the milk* daily, according to the practice in Scotland, a frozen cream always making rank butter. German stoves, burning charcoal, are useful in a dairy. The milker should never be suffered to enter the dairy in a DIRTY APRON, COVERED WITH HAIRS FROM THE COW HOUSE; on this head, three reprimands, *the last accompanied with a discharge.*

An upright HAND-CHURN, or BARREL-CHURN, will either of them answer the purpose. The quantity of milk being large, the latter will be most convenient. Baker of London has invented a box-churn, with a spindle, which turns in the manner of a hand-organ, and which, as calculated for a small dairy of two or three cows, seems likely to supersede the old upright hand-churn. It may be placed on a dresser or table. Price, for one to make fourteen pounds of butter, 2*l*, 16*s*. It may be had of any size. It is said that 'the Shakers' of Enfield, New Hampshire, U. S. America, have a still higher claim to ingenuity in the case, since they churn their butter by wind, attaching small sails to the churn, to be moved by a light breeze.

Much has been said and written on the difficulty of making butter *come;* it is, however, no less true that butter which comes too quickly is not likely to be too good, nor ought any to come indeed, under nearly an hour's labour. The difficulty exists only in cold weather, when the churn may be placed near to the fire. In summer, cool the churn with cold water; in winter make it warm. Strain the cream through a fine sieve or linen cloth. It should be remembered, however, that the use of warm water or taking the churn near the fire, always prejudices the butter, and in course, should not be practised but in case of absolute necessity. First of all, when the butter is backward, *at the time it ought to* *come, not before,* put in half a gill of good vinegar mixed in a small quantity of warm milk. In summer heats, the cooler you churn the better, even to setting your churn in cold water.

The PROCESS being complete, and the butter MADE, strain off the butter milk and put the butter into cold water, dividing it afterwards into small lumps upon a sloping board. Beat it well with wooden pats, *not sweaty hands,* until entirely free from the milk, and quite firm, cold water being at hand to throw over the board occasionally, and to wash the pats. Salt with fine beaten-salt as much as sufficient. The butter being made up according to the custom of the place, let the lumps be spread separately on a cloth, that they may not adhere. A highly-esteemed Norfolk friend writes me, 'butter is better without washing.' The affair is then left to the discretion of the practical reader.

In Lancashire, the milk is not skimmed for making butter, on the contrary, the whole produce of the cow is placed in mugs till it becomes sour, when it is churned; and thus is produced butter, according to the provincial opinion, at least equal, if not superior, to that of any other part of Great Britain. The butter milk, thus produced, is perhaps superior to skimmed milk, and forms a wholesome and nutritious beverage for the poorer classes of that populous county.

Though this practice is ancient in Lancashire, and partially in the vicinity, the farmers of our chief dairy counties which supply the metropolis do not seem to approve, by their neglect of it. At any rate, it must occasion much additional labour.

The following *Recipe* for making butter without churning, I have never tried. It seems calculated for small quantities. Put the milk into a flat earthen dish, let it stand twelve hours, put it over a slow fire until scalded, not boiled: then let it stand twelve hours, take off the cream, and put it into a round earthen dish, stirring it round with a clean wooden spoon, and it will come to butter in about five or ten minutes. The cream cannot be kept too cool during the time you are stirring it, whence it is best to place the dish in cold water. As soon as the butter shall be so forward that you can take off a little butter milk, continue putting in cold water and washing out the milk. The cream may be kept after scalding, three or four days, before making the butter, without injury.

'To put BUTTER down for KEEPING let the salt be perfectly fine; a layer of salt at the bottom of the firkin or jar; beat the butter down with a hard wooden rammer, not *hot fists*, and cover the top with salt.' *The best colouring for* *butter is good keep for the cows.* — *New Farmer's Calendar.*

Previously to a few general remarks on the process of cheese-making, of which neither my wife, my prime minister, nor myself knew any thing practically, I will give an anecdote or two, which occurred within our knowledge, whilst resident in Middlesex. A curious gentlewoman in the vicinity, native of Gloucestershire, who kept half a dozen cows, took it for granted that the inferiority of Middlesex cheese subsisted merely in the defect of Gloucester intelligence and skill. In conformity, she procured a skilful cheese dairy woman from her own county, and under her own superintendence, the experiment was made; the result, however, unfortunately, was *Middlesex* cheese even to the third season, which produced conviction and abandonment. I, however, not to be discouraged or distanced in the career of improvement, became inoculated, and communicated the *affection* to a near relative in Essex, who had meadows producing the most fragrant butter to be conceived. I sent her the Cheshire process, from which, personally superintending it, she manufactured indeed, some of the richest of cheese, but about as nearly equal to Cheshire, whether new or old, as home made British is to foreign wine. It was fat, milky, insipid and void of all strength or flavour.

My inquiry as to the cause of this failure, has been answered by the assertion that, superior cheese making depends on the peculiar and local nature of the herbage. I wait for further light. All things change, who then can say that anon, the best Gloucestershire and Cheshire cheese may not be made in Middlesex, Essex and Suffolk ?

The process of CHEESE-MAKING is generally well understood in the regular cheese-making districts, which supply the rest of the country with such an admirable commodity, whether of the fancy or useful kinds ; but it is not worth repetition elsewhere, being, as the case stands, merely an inducement to people to waste good milk.

THE CHEESE DAIRY. I have just now observed that, to make ordinary cheese is merely to waste good milk, which, however, must be understood as referring only to private families, since farmers who have a number of servants to feed, can scarcely be expected to go to the price of Cheshire or Gloucester thin cheese, when they have a home-made substitute which does not cost them above one-third of the money ; and the practice of making this ordinary commodity is universally known in the country. Cheese making, however, is a more operose process than that of butter, requiring more attention and labour, and a greater number of utensils and conveniences ;

more particularly so in the regular cheese dairies, where the best cheese of commerce is manufactured. It is in them kept distinct from the butter dairy, requiring several separate rooms, namely, a PRESSING-ROOM for making and pressing the cheese, which ought to join the milk-room, and be provided with a fire-place. A SETTING-ROOM, paved with stones, or smooth plaster, and laid on a descent, in order to carry off water, should also be furnished with a table or shelves, on which the cheeses may be deposited, and turned over occasionally, until ready to be removed. A CHEESE-ROOM or loft, in which the cheeses are stored until ready for sale. The floor of this room is carpeted with coarse grass or rushes, which are supposed to have a beneficial effect on the new cheese. This loft, in some of the great dairies, is found over the cow-houses, not only for convenience sake, but on the opinion that the ascending warmth of temperature from the cattle, has the effect of accelerating the ripening of the cheese. These lofts are more convenient when the walls are lined with shelves, and stages placed in the middle of the room. But the arrangement followed in North Wilts, as Marshall describes it, seems superior in point of convenience. The cheese-room with its shelves, is there placed immediately over the dairy, and the loft over the cheese-room, each floor having trap-doors through which the cheeses may be handed down.

The UTENSILS for cheese making are, first, a CHEESE-TUB, in which the curd is broken and prepared. These tubs, in course, vary in size proportional to the quantities of milk used, and are in form, either round or oval. A CHEESE-KNIFE, of the spatula form, of wood, wrought to the thinnest possible edge, or with a wooden handle, four or five inches in length, and two or three iron blades twelve inches long, one inch broad near the handle, tapering down to the breadth of three quarters of an inch at the point, and shaped like an ivory paper-knife, the blades about one inch asunder, very thin, and ranged with their flat sides towards each other. These are used in Gloucestershire, and are to be preferred to the wooden knives. In some of the continental dairies, these knives are furnished with six or seven blades.

The CHEESE BOARD is circular, of wood that will not warp, and planed smooth on both sides, about an inch or an inch and a half in thickness. Upon these boards, placed upon the shelves of the cheese-room, the fresh made cheeses are placed. The boards are of various sizes, and of a form to pass within the hoop-part of the vat, and to receive the weight or power of the press. The VAT, hoop-formed, must be strong, and its sides and bottom perforated with holes, through which the whey may run off as the cheese is pressed. In every considerable cheese dairy, there ought to be vats of various sizes in readiness, in order to adapt those used to the quantity of curd which the cheese-tub may contain, and to avoid the addition of overplus, which, kept from meal to meal, frequently spoils a whole cheese.

The CHEESE-PRESS, which forces the whey from the curd, should be skilfully constructed, and with sufficient power. This power may be either derived from a SCREW, (at present most in use) a LEVER, or DEAD-WEIGHT; but, under whatever form, the power must be in proportion to the thickness of the cheese to be made. Should it not press level, or have too much play, so as to incline, or become tottering, leaning to the one side or the other, and not fall perpendicularly upon the cheese-board, one side of the cheese will not only be thicker than the other, but one side may be thoroughly pressed, while the other is left soft and spongy. In the common dairies, where both butter and cheese are made in the same place, an exception should be observed with regard to the cheese-press, which should never be fixed where the milk and butter are kept, as they are liable to be affected by acid evaporations from the whey and curd. The

CHEESE-TONGS, a kind of wooden frame, are occasionally placed on the tub, when the vat is upon it, and the whey draining from the curd.

Making fine cheeses, even from the best herbage and the richest milk, is a critical business, depending on a variety of incidental circumstances. The cows should ever be milked, during the summer season, very early in the morning, and at the latest convenience in the afternoon, in order to avoid the ill effects of the solar heat. Again, the cows should not be driven any considerable distance to be milked, by which the milk becomes heated in the udder ; nor should the milk be carried any distance, as the motion and agitation occasioned by carriage, has nearly the effect of churning it into butter, and rendering it unfit to be made into cheese. Milk in this buttery state will often be four or five hours before it will curdle, and here we have the cause of that defect on cheese, called *hoven*, or split. It is one of the greatest advantages in a cheese dairy, to have the cow pastures as near to home as possible ; and should the herbage be insufficient, the cows might still remain on the home pastures, their food from other parts of the farm being cut and carried to them. Dr Anderson recommends milking the cows three times in the day, and, probably, more milk might be so obtained, but the additional labour is considerable, and the cows are too much disturbed by it.

The milk ought to be conveyed as quickly as possible to the dairy, and poured into different vessels for the purpose of cooling it with the least delay, more especially in summer, to avoid fermentation; and to this end it is the custom repeatedly to draw off the milk and pour it back again into the coolers. Leaden utensils, indeed, cool the milk more expeditiously than any other, but their danger, from the poisonous properties of the lead, combined with the *lactic* acid, are sufficiently known.

SETTING THE CURD AND PRESSING. The best cheese, of course, is made in *season*, from the beginning of May to Michaelmas, or in a favourable Autumn to mid October. In the regular dairies, particularly when the trade is encouraging, cheese is made throughout the year, but winter made cheese is inferior, and besides requires a longer time to ripen for use. The cows, however, must be full fed during the winter, and upon the most nourishing and succulent food, at the head of which stand hay and carrots. Indeed, under all circumstances, milch cows should be equally full fed during winter as summer, if the view be to obtain the greatest possible profit from them. Where twenty-five cows are kept, a cheese of sixty pounds weight may be made daily, from May to the end of July.

The milk placed for setting the curd should be of the temperature of 85 to 90 degrees of heat; if from cows fed upon poor clays, it will require the highest temperature. Some dairymen heat the milk, which being too often burnt to the bottom of the pot, it is generally held preferable to acquire the requisite warmth by the addition of boiling water, the quantity of which is regulated by the use of the thermometer. The admixture of water is said to accelerate the effect of the rennet in the coagulation of the milk.

Rennet. The article in common use, as rennet, or for the purpose of coagulating the milk, is the maw or stomach of a calf which has been fed on milk only, and killed before digestion has been perfected. This should be perfectly sound and untainted. The maw of a house, or milk, not grass-fed lamb, may possibly answer the purpose. Take out the curd and wash the bag, after which, replace the curd with a considerable quantity of salt: put down the bag or bags in a jar, with a very strong brine of salt and tepid water, in the proportion of two quarts to each bag. After some days, the maws may be taken out, and with an additional quantity of salt, each stretched upon a bow, and hung up to dry for use. The usual application is as follows; — the night before cheese making, one or two inches of a maw is cut off and steeped in a few table-spoonfuls of warm water; on the following morning the liquor is strained off, and poured into the milk. One inch is generally held sufficient to curdle the milk of five cows. Some persons put rose-leaves, sweet-brier, cloves, and various aromatics into the rennet, for the purpose of imparting a fine flavour to the cheese. The rennet bag, again salted and dried, during a week or two, near the fire, may be of further use. Any acid will coagulate milk, and in the Dutch dairies, the *muriatic* acid, or spirit of salt is used, but it imparts to the cheese a sharp and disagreeable saline flavour, which, however, is said to have the advantage of being destructive to mites. Various substitutes are in print for the rennet of the calf's maw, such as a decoction of the flowers of yellow-ladies'-bed-straw, or of spear-grass, the lesser spear-wort; but I much doubt the efficacy of such simples, and in case of necessity, and to prevent disappointment, it is best to have recourse at once to the muriatic acid, using it with great caution, and in the smallest efficient quantity.

Artificial colouring. The native colour of cheese, skilfully made from rich new milk, will incline to a bright yellow, which, being the favourite colour, inclines the makers to heighten it artificially, a practice which also serves to impart to lean and ordinary cheese, an appearance of richness. For this purpose, turmeric and marygold leaves were formerly used, but the Spanish *arnatto* has long been the universal cheese-colouring. There are various ways of using it, but the most expeditious and equally effective mode is to dissolve a lump of arnatto of the size of a hazel-nut in a pint of warm milk, the night before the cheese is made, and infuse it in the milk immediately on the rennet being put in.

Coagulation, or curding, will take place in from one to two hours, the milk having been set in its proper state; otherwise, as has been said, the curd may not come under more than double the time. Should the milk be in a heated and unfavourable state, the immediate addition of cold fresh spring water is the usual remedy. The quantity of water added must be regulated by experience, and the use of a thermometer. The milk must remain covered. So soon as the curd shall have been fully formed, the first operation is to cut it in all directions with the many-bladed knives, that the whey may rise through the incisions and the curd sink. This cutting must be repeated, until the curd shall be reduced to the smallest and most even particles. The cheese tub is then again covered, and must remain until the curd has sunk to the bottom, when the whey is laded off. In a short time the curd will settle and become solid, and may then be broken into the vat, where it again goes through the operation of cutting, and pressure is applied until it be perfectly drained of the whey. The utmost attention is required in this stage of the business, to lade off all particles of *slip-curd*, namely, such unsubstantial parts as have been loosened from the solid mass, and will be seen floating on the surface of the whey ; such, if not removed, will dissolve in the cheese, and occasion *whey-springs*, which greatly reduce its worth, producing early unsoundness. The whey being of a *green* colour is the indication of a perfect make ; but if white, it is a sign of imperfect coagulation, and that the cheese will be *sweet* and of inferior quality. The curd being fully consolidated is put into several separate vessels, and again broken with the hand, as small as possible ; salt is then added and intimately mixed with it ; and it is often the practice to over-salt poor and inferior cheese in order to impart to it some semblance of strength and relish.

PRESSING. Breaking and salting finished, a cloth is spread over the vat, which is pierced with holes, in bottom and sides, to facilitate the escape of every remaining drop of whey, and when the cheeses are large they may be pierced with iron skewers for the same purpose. A smooth round board is then laid over the covered vats, which is usually filled to the height of one inch above the brim, lest the curd should shrink below its sides. The whole is then put into the press for two hours, when the cheese being withdrawn is put into a tub of scalding whey for an hour or two, to harden its coat, which is supposed to render it more fit to stand a sea voyage, but is apt to render cheese tough and horny coated, thence scalding is better omitted with such as is intended for home consumption. In small dairies, having no press, the substitute is a broad hoop, open at top and bottom, perforated with holes, and placed upon a board also perforated. The hoop being filled with curd and another board placed upon it, a moderate but adequate weight may be laid thereon to press the cheese, which should be turned twice a day, until sufficiently firm. On removing the cheese from the vat, it should be wiped dry, and when cool wrapped in a clean dry linen cloth of a fine texture, and afterwards pressed during six or eight hours.

The cheeses being turned, are taken to the SALTING-ROOM, and rubbed on both sides with salt, and wrapped in a fresh dry cloth, finer than either of the preceding, which change in the degrees of fineness in the cloths is used to the end that, the least possible impression may be made on the coats of the cheese. Pressing again, and for the last time, takes place for twelve or fourteen hours. Should any projecting edges remain, they are to be pared off smooth, and the cheeses being laid upon a dry board are turned daily. Cheese after it has been pressed and perfected, should be kept warm, until it have gone through its sweat, and become as dry and stiff as can be expected; since that state of firmness is not only forwarded by warmth, but also the ripeness and richness of the cheese.

The CHEESE-ROOM OR LOFT, should be dry and well ventilated, but hard and soft cheeses should not be deposited together in the same room, since the moisture of the latter will be imparted to the hard cheeses, occasion them to soften, and their coats to become thick and ill coloured. On the contrary, when cheeses become too hard, whether from scalding or other cause, the practice is to heap five or six cheeses, one upon another in a warm room, which can be ventilated, and to turn them daily. Moist cheeses set on edge, are apt to warp, and get out of form. Cheese left to acquire age for market, require constant attention and turning for their due preservation. Our best British cheese is not in perfection until at least twelve months old, when its coat will have acquired the favourable blue tinge. Large cheeses, in some dairies, are smeared with fresh butter, twice or thrice a week during several weeks, and kept moderately warm, no partial currents of air being admitted into the room, which may cause the cheese to crack. When cheese from imperfect making, becomes hoven, a remedy is attempted by pricking with skewers, or by rubbing a composition, known by the name of *cheese powder*, upon the cheese, at the second and third pressing. This powder is composed of armenian bole and nitre, and from the disagreeable flavour imparted by it, the remedy is, at last, full as bad as the disease. The best remedy is attention to turning and drying the cheese, the inferior flavour of which, from the original error, may perhaps not be so disagreeable as that, certain to result from the pretended cure. In some dairies, the edges of the cheeses are rubbed hard with a cloth, and the floor cleaned and rubbed with fresh herbs.

Our chief British *fancy* cheeses, the CHEDDAR (Somersetshire, perhaps the richest and finest of cheese), STILTON, (Hunts.), the PARMESAN, of England, being made of the richest materials. The COTTENHAM is a thicker kind of Stilton cream cheese, the superior flavour and richness of which are attributed to the fragrant and nourishing herbage of the vicinity. The BRICK-BAT cheese of Wilts, made of that form, where also fancy cheese is made in the forms of various animals, hares, rabbits, dolphins and others. DUN-

LOP (Ayreshire N.B.) These last indeed are not to be ranked as fancy cheeses, but are of excellent quality, in size from twenty to sixty pounds weight.

Among the various CONTINENTAL cheeses, the *Parmesan* has ever borne the bell in this country. It is extremely dry, delicate and simple flavoured, and well merits the name of the ladies' cheese. It is made entirely of skimmed milk, and the curd is slightly coloured with saffron. Three or four years are required to bring it to perfection, though it is exported to all parts of Europe at six months old. It is said to derive its peculiar excellence from the cow pastures of the Dutchy of *Parma* being watered by the Po river; fed on which the cows not only give a superior quantity of milk, but of such quality, that the skimmed equals the pure milk of other countries.

SAGE CHEESE. In a sufficient quantity of milk, steep two parts sage, one part of marygold leaves and parsley. Two handfuls of the former and one of the two latter, are deemed enough to *green* a cheese of ten or a dozen pounds. After the infusion shall have been stirred up, on the following morning the coloured milk is strained off, and mixed with about a third of the quantity intended to be run or curded. The green and white parcels of milk are run separately, as the two curds must be kept apart until ready to be put into the vat, where they may be mixed either generally and evenly, or in an irregular and fanciful manner, as they are often seen.

The above rules for cheese making, which I have extended considerably beyond my first purpose, are chiefly extracted from the Board Surveys, and from Mr Marshall's works, from which I apprehend the most authentic practical documents are to be obtained. As to common country cheese making in company with butter, under which the quality of the cheese is little considered, so that cheese it be, and the process is not over complex, or any extra conveniences in requisition, every ordinary dairy maid is fully *au fait*. The intelligent reader will, however, perceive that there is much labour, attention, and perseverance required in the manufacture of good cheese for public use, and that even on peculiar cheese soils, an equal degree of cleanliness and nicety is indispensable in the cheese, as well as the butter dairy. The five principal cheese dairy districts of England are those of CHESHIRE, GLOUCESTERSHIRE, WILTS, DERBY, and WARWICKSHIRE.

Management of the Cow.

The AGE of neat cattle is determinable by the *teeth and horns.* They, as well as sheep, are destitute of teeth in the upper jaw; but the mark of age, as in the horse, is to be found in the corner incisory teeth of the lower jaw. The first front teeth, or calves' teeth, remarkable for their whiteness, are shed at two years old, and replaced by others not so white. Every succeeding year, two other calves' teeth, next to the front, are also replaced; and at five years old, the incisory or cutting teeth being all renewed, are of good length, whitish and even, and the beast is full mouthed. From that period, as in the horse, the teeth are gradually filling up, until six years, when the mark is complete. The teeth afterwards become discoloured by age, sometimes long and irregular.

The HORNS, at three years of age, are shed and replaced by others, which continue. The indications of age from the horns are as follows — in the fourth year of the bullock's age, a ring appears, encircling the base of the horn. In the course of the year this ring moves, being pushed forward by another which succeeds, and the process continues to the end of the animal's life, its years being determinable by the number of these rings upon the horns, three years being reckoned for the first ring. It is common with cow-dealers to dress up the beast for sale, by shaving the horns, and thereby concealing the age. Indeed the mouth remains as an index, but who but an adept can adroitly lay hold of the animal's horns, and put its head in a posture proper for inspecting the teeth? Thence our advice to unprofessionals, never to purchase without the presence and assistance of a practical man.

Period of GESTATION in the cow, according to an average, *two hundred and eighty-seven days*, or forty-one weeks, with a bull-calf; a cow-calf comes a week sooner. The cow's desire for the bull, every three weeks of the season, should be particularly attended to, so that her milk may be renewed. These animals are extremely liable to abortion, and should be kept from alarm, as much as possible, and out of the way of carrion and ill scents. They are ladies as subject to *hysteric* passion as their betters. They should not, particularly, be driven and harassed about, by rude and heedless boys or girls.

The cow's time having been regularly noted down, it is better to watch and let her bring forth under shelter, in a roomy place, but absolutely necessary in the winter. She should never be tied up, when near calving, as it might occasion her to lose the calf, by being smothered, or otherwise. Give the cow WARM water, and a warm mash or two, with some sweet hay. The CLEANING or after-burden should almost immediately follow the calf, and should be forthwith removed. It may be retained from cold caught, in which case the cow must be kept warm, and fed as above, since she will be entirely ruined should it not come away. The calf should be permitted to suck the first milk or *beastings*, until the flow be abated and no danger remain of inflammation. If the calf be weak, it should be held up to the teat. Some young cows have the udder greatly distended and inflamed two or three days previously to calving, and may be relieved by part of the milk being daily drawn away.

The HOURS of milking should be regular, and it is of the utmost consequence that the cow's udder be perfectly drained of milk to the very last dripping, the habit of leaving milk in the udder being in the end greatly injurious. The last milk, moreover, is always the richest, according to the remark of an experienced Cheshire dairyman, 'each succeeding drop which a cow gives at a meal, excelling the preceding one in richness.' A cow in full milk cannot be well drained under twenty minutes, by the best hand. The udder should be kept well trimmed, and with it the teats should be perfectly clean before milking. The tail, also, should be free from dirt, and every risk avoided of fouling the milk. Upon the continent cows are curried, dressed, and clothed like horses: without going to that extreme, they may be rubbed with wisps and kept clean, that their appearance may be creditable to the family mansion.

The following anecdote, which dates seven or eight years since, may serve to exemplify the nature of these animals, and to show the necessity of both their kind and careful treatment. Mrs Bell, a widow in Anan, N. B., went to milk her cow, when another cow, which was grazing in the same meadow, ran at her, threw her down, and was in the act of goring her, when her own cow came running up, attacked the other with great fury, and succeeded, not only in relieving, but in all probability saved the life of her mistress. This act in the cow may indeed be referred to mere instinctive impulse, urging her to attack the other cow; but with equal reason, to the motive of defending her mistress, since the instances of attachment in animals to particular persons, and the demonstrations of it in acts of kindness and defence, are innumerable. The denial of a limited portion of the faculty styled reason, to brutes, can only result from superficial thinking, from silly, overweening human prejudice, and defective observation. In fact, what is reason itself, but discriminative instinct, common to both human and brute animals, with the latter certainly in a regulated, subordinate, and immensely inferior degree? Still they do discriminate and reason, as certainly as man himself does.

In years past I had a fine tom cat, which we named Bonaparte, and which we suffered to retain that splendid name, until his *godfather* became an apostate and a tyrant. A poor aged stray cat, deserted by some unfeeling wretches, appeared on the tilings of an outhouse, and a more starved, distressed and miserable creature I never beheld; yet having been probably so much frightened and harassed about, it would suffer no one to approach with relief. It attracted the attention of Bonaparte, who (he was surely entitled to the *appellation*) approached it with compassion and kindness, not always shown to distress by the monopolists of reason. At his meal-time he carried to his unfortunate fellow-creature a share of his meat, in which he regularly persisted until it was observed, and the curious tidings were then brought to me. On the next occasion, I watched this pleasing trait of humanity in a brute, from my window, and several times afterwards, I saw Bonaparte sitting upon his haunches, apparently with a consciousness of feeling and gratification, whilst his poor protégé was feasting on his bounty! And this I saw with mine own eyes, and it stands dated in my common-place book. The old animal, at length, judging of our benevolence by that of our cat, lost his fearful apprehension of us, and we took him in. But he was too far gone; and after keeping him in comfort a day or two, as the next and greatest benefit I could confer upon him, I expedited him to his best home, the feline Elysium, in such way that he had no previous dread of the stroke which instantaneously destroyed all sensibility of pain. I have now before me his portrait, a most correct likeness, by the celebrated James Ward, and now sitting by my side one of his great, great grand-daughters.

The CALF may be sold as soon as it has drawn off the beastings, or first milk, unless any *coring* or defect in the cow's udder or teats may render it desirable for the calf to suck a few days, in order that the action may clear off any obstructions, for which the *butting* of the calf's head is generally the best remedy. If intended to be FATTENED for the butcher, it must be kept in a pen, particularly dry and clean, suckled twice a day at regular hours, always have the first, which is the thinnest of the milk, and not be permitted to overcharge its stomach. Lumps of soft chalk are usually placed for the calf to lick, as an absorbent to neutralize those acidities engendered in the stomach from feeding on milk. It seldom pays to fatten a calf beyond ten or twelve weeks.

WEANING AND REARING CALVES. A calf may be weaned by being gradually accustomed to suck milk in a pail through the fingers. Many are reared upon very little milk mixed with hay-tea, linseed, or other slops; fed on straw in the winter, and in summer upon the common. Such cannot be expected to turn to much account.

The best cattle are reared from the teat, well wintered in good shelter, and full fed, until they attain their proper growth. Warmth and dry lodging are of the utmost consequence to the improvement of all young animals. Calves may, however, be reared to good proof, by being suffered to suck a very moderate quantity daily, the bulk of their food consisting of skimmed-milk, thickened with oat or wheat meal; their winter food being carrots or Swedish turnips sliced, and oat-straw, with a small quantity of hay daily.

To such of my readers as desire to make the most of a single cow, I cannot do better than recommend the perusal of a small pamphlet, published a few years since by the Board of Agriculture, intituled '*Hints to Dairy Farmers*;' being an account of the management, food, and produce of a single milch-cow kept by Mr Cramp, keeper of the House of Correction at Lewes, in Sussex: an account which will prove to demonstration, and to the regret of every well-wisher to his country, that our dairy business, the product of which is so precious, and never equal to our consumption, is by no means managed in general upon a profitable or the most productive plan. Cutting and carrying the green food for cows, was recommended many years ago; and I experienced its full warranted utility, with the exception that my cows, when entirely kept in the house, fell off with their milk, whilst they increased in flesh; but recovered their milk again, when allowed a range. Mr Cramp, who so well merited the honorary silver medal of the Board, allowed his cow the small range in his power, and cultivated her green food within the verge of the prison. He also seems to have added, by his experience, a new milky breed to our old stock. His cow was a Sussex bred one, and in all probability, and in his opinion, that famous breed has not hitherto had a high dairy character from mere disuse, and application, solely almost, to the purpose of rearing for beef.

Mr Cramp's cow was seven years old, had produced five calves, and had been two years in his possession. She was fed in *summer* on clover, rye-grass, lucern, and carrots, three or four times a day. In *winter* with hay, bran, and grains, properly mixed, and often fed, particularly when milking. The manger kept clean, and no sour grains, rotten or mouldy vegetables given, on any account, and the cow never suffered to overcharge her stomach, but to be well filled, and kept with a good healthy appetite. She was never tied up, and always had her choice to lie abroad, or in the house. Always when milked, dripped clean to the last drop. Being so well kept, she went dry only seventeen days before calving. The country is under great obligation to Mr Cramp for such an example, by which it is hoped our darymen and housewives will not fail to profit. It is a useful practice of Mr Cramp to give his cow a double-handful of *malt-dust*, mixed with a feed of grains and pollard, without exceeding that quantity of the malt-dust. Potatoes given to cows may be ground in a common apple-mill, or pounded in a trough; my experience, however, will not warrant me in allowing much commendation to that root, as food for any kind of live stock.

Quantities of Milk and Butter produced by Mr Cramp's Cow, between April 1807, *and April* 1808.

From 6th to 20th April — milk 8 quarts per day, butter 6 lbs. per week. From April 21st to June 2nd — milk 22 quarts per day, butter 18 lbs. per week. From June 2d to October 5th — milk 20 quarts per day, butter 16 lbs. per week. From October 6th, to November 30th — milk 15 quarts per day, butter 13 lbs. per week. From December 1st, to February 8th, 1808 — milk 13 quarts per day, butter 11 lbs. per week. From February 9th to March 14th — milk 10 quarts per day, butter 8 lbs. per week. From March 15th to April 4th — milk 7 quarts per day, butter 5 lbs. per week, — dry for calving.

Sale of the year's Produce and Expenses.

	£	s.	d.
Sale of calf 14 days old — butter at 1*s*, 4*d* — skim-milk at 1*d* per quart — dung, valued at 3*l*, in all	76	7	3
Total expenses, including 1*l*, 5*s*, for 10 Sacks Malt Combs, and a Farrier's Bill, 12*s* 6*d*	24	14	3
A year's net profit on a single cow,	£51	13	1

I introduce the Harleian Dairy System, so styled by Mr Harley in his publication, as a sequel to the practice of Mr Cramp, and as a wholesale proof of the ill effects upon the cow, of constant confinement within doors, an unfair practice, which nothing but necessity can warrant. Mr Harley fully establishes the fact of these ruinous effects, by the acknowldgement that no cow can endure them beyond a twelvemonth; after which it is necessary to change the stock, their legs being swollen, their feet sore or foundered, and their flesh and milk greatly reduced. A pamphlet was published upwards of twenty years since, on this subject; but the practice has never been in repute, nor probably ever will be. I have already noted my experience of the falling off in the cow, of her quantity of milk, in consequence of confinement. In the case of a deficient quantity of herbage for the number of cows, it is most profitable to cut it green for them, at the same time, allowing them to remain abroad their due time, either upon the mown lands, or a common.

A person resident at Scawby, near Brigg, purchased a cow, for which he paid twelve guineas: he kept her twelve years, in which time she bore twelve calves; all of them were carefully reared, and sold at the times' prices, and as a remarkable circumstance, he sold her at last for the same price she at first cost him.

THE DISEASES OF COWS.

The chief of these are —*scouring*, the *hoose*, or *chronic cough*, *foul in the foot*, *loss of cud*, *yellows*, *black and red water*, *clue-bound*, *milk fever*, *withering*. With respect to the above, and other diseases to which cows and calves may be subject, the best advice in my power to give to the reader, is the PREVENTION of them, which is, nine times out of ten, possible, and even easy, to those who possess the proper means for cattle-keeping; and in every view, the cheapest and only profitable plan.

Bad keep, and exposure to cold, wet, and dirt, will bring scouring upon the cow, but should such a one chance to be purchased, the reverse of all those, with dry substantial food, will cure her, if sound. CLUEBOUND generally arises from the beast feeding, or rather starving, upon dry straw, and it will be cured by nourishing and opening food. The FOUL in the FOOT may be occasioned by the animal being constantly kept in wet poachy grounds, or long dewy grass, during the autumnal or winter seasons; or from having been driven long journeys. It should be taken in time, when washing, cleanliness, paring, caustics, if necessary, and keeping the cow upon a dry and clean layer, are the chief and most effective remedies. Neglected, the cow never recovers the perfect use of her feet, and both her milking and feeding are thereby reduced. In *withering*, or retention of the *cleaning*, for any length of time, I have never known any remedy, which shows the necessity of due care at the time of calving. Malt-mashes, or half malt and half fine pollard, warm, are excellent cordial medicines for cows. In general, these useful animals will rarely be troubled with disease, if constantly fed with a sufficiency of proper and nourishing food, and well sheltered during the winter season from wet and cold, and from the effects of those atmospheric vicissitudes, to which our climate is so peculiarly liable.

Some exceptions, however, may be made with respect to preternatural cases in CALVING, arising either from constitutional defects or accidents. But I do not profess, in this small treatise, to engage, except cursorily, with the extensive subjects of veterinary medicine and surgery. In all difficult cases, more especially of parturition, immediate recourse should be had to an experienced practitioner, instead of trusting to the rude and unskilful efforts of servants, by which many a cow and calf have been lost.

The following curious experiment proved successful, some years ago. One of the fore-legs of a cow, the property of Mr Little, of Herseford, Cornwall, being accidentally broken, and he being unwilling to kill the animal, caused the leg to be amputated immediately below the knee joint. The wound being perfectly healed, a pad and wooden leg were braced upon the part, by which the cow was enabled to walk about, lie down, and rise with facility.

Additional Remarks, by the Editor of the American Edition.

Those cows which give the greatest *quantity* of milk are the most profitable for suckling calves, for rich milk is said to be not so proper for calves as milk which is less valuable for dairy purposes. Milk which contains a large proportion of cream, is apt to clog the stomach of calves; obstruction puts a stop to their thriving, and sometimes proves fatal. For this reason it is best that calves should be fed with the milk which first comes from the cow, which is not so rich as that which is last drawn.

It is sometimes expedient to dry cows, which you intend to fatten by artificial means. For this purpose, the following recipe is prescribed in *Monk's Agricultural Dictionary*, vol. i, p. 228.

'Take an ounce of powdered alum; boil it in two quarts of milk till it turns to whey; then take a large handful of sage, and boil it in the whey till you reduce it to one quart; rub her udder with a little, and give her the rest by way of drink; milk her clean before you give it to her; and as you see need requires, repeat it. Draw a little milk from her every second or third day, lest her udder be overcharged.'

No more cows should be kept than can be generously fed; one cow well supplied with good and nutritious food, will give more and better milk than 3 or 4 of the same quality, that are stinted in their allowance. They should likewise be well and warmly lodged in winter. In Pennsylvania, barns in which cows are kept in winter, are generally set so as to be protected by a hill or knoll on the north and west sides. The earth of the hill is dug into on a level, and the air in the stables in which the cows are lodged, is rarely, if ever, below the freezing temperature.

Pure water is an essential article for cows. Dr Anderson says he knew a man who acquired great wealth, by attending to things of this nature, and one of his principal discoveries was the importance of having a continued supply of the purest water that could be obtained for his cows, and he would on no account permit a single animal to set a foot into it, nor allow it to be tainted even by the breath of animals.

Pans in which milk is deposited in warm weather, should, if possible, be placed in shallow troughs filled with cold water, supplied at one end from a spring, and constantly running out at the other. This keeps the milk cool and causes the cream and of course the butter to be clean and sweet. We are informed that many farmers in Pennsylvania, Kentucky and some other parts of the southern section of the country, make great use of what they call '*spring-houses*,' which, by the influence of springs, having their sources deep in the ground, are kept cool in summer and warm in winter. These make excellent dairy rooms, and it is said that the butter of Philadelphia market, owes its unrivalled excellence in great part to the temperature of the spring houses.

In Holland for the sake of cleanliness, the tails of the cows are tied to the roof of the cow house with a cord, during the time of milking. The cow houses, both in Flanders and Holland are kept remarkably clean and warm; so much so, that a gentleman mentions his having 'drank coffee with a cow keeper in the general stable in the winter, without the annoyance of cold, dirt, or any offensive smell.'

The following extract from a letter from R. Smith to J. H. Powell, relative to the arrangements of the dairy farm of the former, called the Orange Farm, two miles from Baltimore, will, we think, be read with interest and profit: —

'The barn is constructed according to the best Pennsylvania models. The yard is to the south of it. On the east and west sides are cow stables, containing 110 well made stalls, and ventilated by a sufficient number of windows and double doors. At the tails of each range of cows there is a drain made of strong planks, — and so fixed as to receive all their dung and urine. These several drains have a sufficient declivity to carry all the fluid matter to their southern termination, where they intersect similar drains, which convey all this liquid manure into a cistern fifty feet long. This cistern is so placed and constructed as to receive not only the urine of the stables, but also the liquid matter of the farm yard. In it there is a pump, by means of which its contents are pumped into a large hogshead, fixed on a pair of wheels drawn by oxen. To the end of this hogshead is attached a box pierced with holes, into which this liquid manure flows through a spigot and faucet, and is then sprinkled over the ground as the oxen move forward.

'For the purpose of augmenting the quantity, and of improving the quality of the food of my stock of every kind, I have established a steam apparatus. It consists of a boiler, and two wooden boxes, in which boxes is steamed the food. These boxes contain each eighty bushels. By this simple apparatus every species of coarse vegetable offal is converted into nourishing food, and all the ordinary provender is rendered more nutritious.*

NOTE BY THE EDITOR: — * The importance of *cooking* food for animals is not generally so well appreciated as it ought to be; nor is the principal cause or source of improvement, as well in quality as quantity of cooked food over its raw materials, known to every economist. The researches and deductions of philosophers and chemists, assure us that *water* supplies *food* for animals as well as plants. But, in order that water may yield its best and greatest effect as nutriment either for man or beast, it is necessary to *cook* it, or increase its nutritive powers, by the agency of heat; by which water, when combined with certain substances of vegetable origin, is converted into wholesome, palatable, and often *solid* food.

It is a fact, which will be acknowledged as soon as stated, that a pound of Indian meal, of rice, or any other farinaceous substance, when boiled, contains more nourishment than several pounds in a raw state. Count Rumford has stated that 'From the results of actual experiment it appears that for *each pound* of Indian meal employed in making a pudding, we may reckon *three pounds nine ounces* of the pudding. † And

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† Rumford's Essays, vol. i, p. 258, Boston ed.

'In the dairies near Philadelphia, it is well known that sweet butter of the first quality can-

again, three pounds of Indian meal, three quarters of a pound of molasses, and one ounce of salt (in all 3 pounds 13 ounces of solid food) having been mixed with five pints of boiling water, and boiled six hours, produced a pudding which weighed *ten pounds and one ounce.** Thus we gain from the raw material about 300 per cent in weight, and, no doubt, the gain as respects the quantity of nutriment contained in the pudding, over and above the component parts as they existed before boiling, was still greater. The gain of weight in rice, in consequence of boiling, is still more considerable than that of Indian meal, and every one knows that a small quantity of oat-meal, will produce a very great relative proportion of gruel.

I will give other examples, proving that water is not only capable of being converted by heat into solid nutriment, but may be made to compose a constituent part of sugar, one of the most nutritious of substances. It is remarked by De Saussure, that, 'As starch boiled in water with sulphuric acid, and thereby changed into sugar increases in weight, without uniting with any sulphuric acid, or gas, or without forming any gas, we are under the necessity of ascribing the change wholly to the *fixation or solidification of water.* Hence we must conclude that *starch sugar is nothing else than a combination of starch with water in a solid state.* The sulphuric acid is not decomposed nor united with the starch as a constituent.'

It appears, likewise, that Capt. Palter, of Sackett's Harbour, at the instance of Samuel Guthrie, of the same place, has succeeded in the manufacture of sugar from the potatoe; and a detail of the process by which this is effected, is given in Professor Silliman's Journal of January, 1832. It is there said that —

'A bushel of potatoes weighs about sixty pounds, and gives eight pounds of pure, fine, dry starch. This amount of starch not be made from cream *quickly* produced from *fresh* milk, and that whenever the milk remains

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* Rumford's Essays, vol. 1, p. 264, Boston ed.

will make five pints of sugar, of the weight of nearly twelve pounds to the gallon, equal to seven pounds and a half to the bushel of potatoes, or a little less than a pound of sugar to a pound of starch. The sugar is not so sweet as the Muscovado sugar, nor is it actually so sweet as its taste would indicate.

'This sugar may be used for all domestic purposes. It ferments with great liveliness and spirit, when made into beer, yielding a healthful and delicious beverage, and on distillation a fine cider-brandy flavoured spirit. It would, however, be most useful in making sweetmeats, and may be used upon the table instead of honey, for which it is a good substitute. It has already become a favourite with most people who have become acquainted with it. Its taste is that of a delicious sweet, and as an article of diet is unquestionably more healthful and less oppressive to the stomach than any other sweet ever used.'

The elements or chemical constituents of starch, and of sugar, are nearly the same. According to Mr Gay Lussac and Thenard, 100 parts of starch are composed of

Carbon, with a small quantity of saline and earthy matter,	43.55
Oxygen,	49.68
Hydrogen,	6.77
	100.00
or, Carbon,	43.55
Oxygen and hydrogen in the proportions necessary to form water,	56.45

Lavoisier concluded from his experiments that sugar is composed of the following elementary proportions in a hundred parts: —

28 carbon,
8 hydrogen,
64 oxygen.

many days to produce its cream, such cream acquires an unpleasant taste that is imparted to the butter.

Then to turn starch to sugar it is merely necessary to subtract from the carbon of the starch, to wit, 43.55, 15.55, and it will stand 28 carbon.
To add to the oxygen of the starch, to wit, 49.68, 14.32, and it is 64 oxygen.
To add to the hydrogen of the starch, to wit, 6.77, 1.23, and it is 8 hydrogen.

Thus, by adding oxygen and hydrogen to starch, in certain proportions, and by subtracting or driving off as much carbon as will be equivalent to the additions, starch is changed to sugar. Water is composed of oxygen and hydrogen, and, together with the sulphuric acid, furnishes the elements necessary for the change, by the agency of the same heat which expels a part of the carbon.

Should any person still doubt whether water can exist in a solid state, combined with other substances, but not frozen, let him take the trouble to weigh a small quantity of quick lime, then slake it with water, and mark its increase of weight.

Braconnet, a celebrated chemist, raised vegetables in pure river sand, in litharge, in flowers of sulphur, and even among metal, or common leaden shot; and in every instance nothing was employed for their nourishment but *distilled water*. The plants throve, and passed through all the usual gradations of growth to perfect maturity. The author then proceeded to gather the entire produce, the roots, stems, leaves, pods, &c. These were accurately weighed, then submitted to distillation, incineration, lixiviation, and other ordinary means used in careful analysis. Thus he obtained from the vegetables all the materials peculiar to each individual species, precisely as if it had been cultivated in its own natural soil;—viz. the various earths, the alkalies, acids, metals, carbon, sulphur, phosphorus, nitrogen, hydrogen, &c. He concludes this important paper with these remarkable words:—'Oxygen and hydrogen, with

'Since the month of January 1823, my dairy people have been in the practice of always placing the pans containing the milk in water simmering hot. The oily parts, which constitute the cream, are, by such heat, separated from the other ingredients, and then from their specific lightness they of course ascend to the top in the form of cream. Cream is thus obtained during the coldest weather, in the course of about twelve hours after the milk has been taken from the cows. And the operation of churning such cream never exceeds twenty-five minutes. The milk pans remain in the hot water about thirty minutes. The butter has invariably been of a good flavour, and of a beautiful yellow colour; and in the nature of things, it never can be otherwise, unless

the assistance of solar-light, appear to be the only elementary substances employed in the constitution of the whole Universe; and nature in her simple progress, works the most infinitely diversified effects by the slightest modification of the means she employs.'

This chemist entertained an opinion founded on experiment, that the elements of water composed plants, the decay of plants formed the materials which constitute the earth; and of course the 'Great Globe and all which it inherit,' so far as natural causes are concerned, are products of the modification and fixation of water. Other philosophers assure us that the remains of marine animals, &c, are found on the highest mountains; and that there are many and incontrovertible proofs that the solid parts of the globe have gained on its waters, not only within the limits of authentic history, but in some cases within the memory of man.

the dairy women should be utterly ignorant of the art of making sweet butter.

‘ It may not be amiss to state to you, that the skim milk, under this process, is a very pleasant beverage. In summer and in winter it bears the agitation of a carriage without becoming sour. And every morning throughout the year a person comes to the farm, and takes from 150 to 300 quarts, for which he pays two cents per quart cash, and the same day he retails the whole among the people of the town, at three cents per quart.

‘ The hot water in which the milk pans are placed, is contained in large flat wooden vessels, attached to a stove. The water is heated by means of a flat tube, fastened to the side and near to the bottom of each vessel, and introduced through an aperture into the stove. The heat of the stove affords the additional advantage of preserving in the dairy house the requisite temperature during the winter season.

‘The dairy house is a stone building, consisting of three spacious apartments for the preservation of the milk, the cream and the butter, and for the making of the butter. Two of these apartments are under ground and arched, and properly ventilated. To the south side is attached a convenient shed, with the requisite shelves, with a copper boiler for the washing and keeping in good and sweet condition all the dairy utensils. In the front is a pent house.

The following remarks on making and preserving butter are from the pen of Jesse Buel, Esq. an eminent American Cultivator, whose writings, influence and example have been of very great service to American tillage, and give him a high rank among the benefactors of his country: —

'The art of *making* butter consists in separating with skill and neatness the oil from the serum and curd with which it is combined in the milk, and of seasoning it to suit the palate. The art of *preserving* good butter lies in so keeping it as to have it retain its rich and sweet flavour. The best method I know of affecting these objects, is embraced in the following rules:

'1. In the first place, see that your cows are supplied with a plenty of nutritious food. This is the raw material from which butter is made; and unless this is good and abundant, the manufactured article will be scanty and poor.

'2. Let the milk be set in shallow and broad pans, of wooden, tin, or stone earthen ware to facilitate the separation of the cream in a cool clean apartment.* Red glazed earthen is bad;

'* A good practice prevails in Pennsylvania of building stone milk houses over or near springs, where a proper temperature is maintained during the heats of summer. This practice is worthy of imitation where springs are convenient; and where they are not, a substitute which I saw at Col. M'Allister's, at the and lead is often poisonous. I think the best temperature is about 50° of Fahrenheit.

'3. Let the cream or milk * be churned before it has become rancid or bitter, as at this stage it has lost its finest qualities for butter.

'4. The operation of churning should be moderately and regularly performed. † If too slow, and at intervals only, the separation is tedious and uncertain. If violent the cream is too much heated, and yields a white insipid butter.

'5. Put no water with the cream nor with your milk. The flavour, I may say aroma, which

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Blue Ridge above Harrisburgh, may in many cases be adopted. The Colonel had built a neat underground room, in the side of the hill near his well, handsomely plastered upon brick or stone walls, covered I think with earth; at all events, with a luxuriant Bignoria radicans, which when I saw it was in full bloom. Around the sides were sinks or vats for setting in his milk pans, so constructed that the water passed off ere it reached the rims of the pans, with plugs in the bottom to let the whole off when desired. A spout led from a pump into these sinks, through which the water was conducted. By renewing this water occasionally, according to the weather, an equilibrium was easily maintained in the milk house at the desired temperature.

'* In a great part of New York, the milk is churned; in New England generally only the cream. The Dutch method I think produces the most buttor.

'† The dog churn is in general use in many counties, particularly on the borders of the Hudson. In Orange we hear this in operation on a summer morning at every farm house. It is a great saving of labour to the family which has a barrel of milk to churn daily. In one place I saw a sheep treading the diagonal platform, and another tied at hand to relieve him.

gives to butter its high value is extremely volatile, is disengaged by heat, and materially dissipated by water. Work the butter thoroughly with the butter ladle, in a wooden bowl, which may be set in water to cool the mass; and while the operation is being completed, mix pure fine salt enough with the butter to season it for the table, and set it by in the bowl in a cool cellar till next day — at which time the salt will be completely dissolved, when it is to be thoroughly incorporated by again working the butter with the wooden ladle until every particle of the liquid is expelled.

'The making process is now completed. To preserve the rich flavour, which this process secures, pack the butter nicely down in a perfectly tight sweet vessel, and none is better than a stone earthen jar, *without a particle of additional salt*; smooth the surface, and cover the top two inches with a strong cold brine, which has been made by boiling and skimming the materials. If a pallicle or scum is seen to rise upon the pickle, turn off the liquid, and replace it by fresh pickle.

'I am accustomed to eat butter of May, June and October, made and preserved in this way, when it is from six to twelve months old, without perceiving any material difference between it, and that which is fresh made.'

Mr Buel is of opinion, that Liverpool blown salt will not keep butter sweet, and is, besides, deleterious to health, when used for culinary purposes; and refers to an article on this salt, published in the New York Medical Journal, by Drs Miller and Mitchell. 'They ascribe,' he observes, 'to its use, much of the sickness which affects parts of our country. Pure alum salt should alone be used, after it is ground or well pounded. The salt made at Onondaga, by solar evaporation, and sold in casks for table use, is, perhaps, as pure muriate of soda as comes into market.' *

John Prince, Esq. of Dorchester, Mass. (whose experience, science and judgment as a cultivator entitle him to much weight in all questions relative to rural economy), says: 'We know that Liverpool salt weighs but 56 lbs. per bushel, and that from the Bahamas 84 lbs. per bushel — therefore, in many instances, I doubt not damage may have taken place from using it by *measure*, when *weight* would have been more correct.' Mr Prince is of opinion that large grained salt is of importance in salting meats and fish, in keeping the pieces separated by being longer in dissolving, so as to more thoroughly penetrate the meat. 'I can have no doubt that the English salt, for every purpose, is as good as any other, *if the same rate of fineness and weight is used.*'

'On my farm, where my own family butter for winter use is made, I have always used the Liverpool bag or table salt, and it has always kept perfectly well, and in May we think it better than *new* butter (before grass feed.) I am well convinced that the badness of butter is more owing to the want of proper care of the milk, and in not *thoroughly extracting the butter milk*, than in the salt; for we know that the Dutch are famous for their butter keeping well, even when sent to the West Indies, and they use *very little* salt.'

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* See N. E. Farmer, vol. x, p. 241.

Mr Prince observes that according to Ure, 'That kind of salt which possesses most eminently the combined properties of hardness, compactness, and perfection of chrystals, will be best adapted to the purpose of packing fish and other provisions, because it will remain permanently between the different layers, or will be gradually dissolved by the fluids that exude from the provisions; thus furnishing a slow but constant supply of saturated brine. On the other hand for the purpose of preparing the pickle or the striking the meat, which is done by immersion in a saturated solution of salt, the smaller grained varieties answer equally well; or on account of their greater solubility even better, provided they be equally pure. Dr Ure's experiments show that in compactness of texture, the large grained British salt is equal to the foreign bay salt; their antiseptic qualities are also the same.' *

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* See N. E. Farmer, vol. x, p. 268.

Mr Prince has some observations in the same paper, on the use of salt for sheep, which, though foreign to the other subjects treated of in this little work, we will venture to introduce, and make utility our apology for including some remarks not anticipated by our proposed topics of discussion.

'You will recollect it is not long since I noticed in your paper the losses I had sustained in a valuable flock of sheep, which I thought might have been produced by their eating the leaves of the wild cherry. I begin now to suspect it may have been caused by a *too free use of salt.* Last May I put into the care of the Society of Shakers, at Canterbury, New Hampshire, a small flock of New Leicester sheep, which I had kept in Jamaica Plain [near Boston] for two years, and were in perfect health. Here we have never given any salt to our animals. In December last, one of their people came to me to ask what could be the matter with these sheep, as some of the last spring lambs had *scoured* very much; and they could not prevent it. Two days past, one of their people came again to say they believed they had discovered the cause, and the sheep were now doing very well. On opening the last one that died, they found nothing but very thin slimy matter in the intestines. They had salt *at all times* to go to; and by watching they found as soon as they had eaten salt they immediately went to drink ; they then took away the salt, and give it now but sparingly, say once in ten or fifteen days, and since then there has been no sickness among them ; they were doubtless weakened by so much drink, though of pure water.

'For about six years, I have furnished the mineral rock salt to my sheep in New Hampshire, being more convenient and economical—they have had it at all times to go to in winter and summer, and plenty of water at hand. But although for several years past we have lost a great many, (lambs more particularly under one year old), we had never thought of salt injuring them, which I now believe must have been the cause ; and in future shall allow only a small quantity, and not oftener than once in ten or fifteen days. Previous to procuring the mineral salt, the sheep had common Liverpool salt once a fortnight ; at that time our losses were not many.'

But to return from this digression. We have conversed with the Messrs E. and A. Winchester, and other large dealers in beef, pork and other provisions for Boston market, and they agree in opinion with Mr Prince that there is nothing destructive or deleterious in the use of Liverpool salt for the preservation of meats, &c ; but its antiseptic or preservative powers in a given quantity are not nearly so great as those of salt obtained by solar evaporation in hot climates. They likewise state that a great caus of the spoiling of salted beef, pork, &c, is the settling or subsidence of the saline particles, when the barrel, or other vessel containing the meat and its pickle is suffered to remain too long at rest. Such vessels should be frequently rolled over or reversed, otherwise the upper parts of their contents become tainted or putrescent, while the lower parts remain in a good state of preservation. They likewise prefer the use of coarse grained salt in packing or laying down meat, on account of its keeping the pieces from contact, and in dissolving slowly, affording durable supplies of saline matter.

There has been much dispute among our agriculturists, relative to the comparative merits of our native and imported cattle. The following from a communication originally printed in the Mass. Agr. Rep. written by the Hon. John Welles, gives a fair view of this subject: —

'It is certainly to be regretted, that some respectable farmers show a disposition not only to indulge prejudices against the imported breeds of cattle, but to excite these impressions on the minds of others. They appeal to a popular feeling, and a very natural one, which too easily besets us, "our own superiority." "The true worth of our ancient breed," says one, "as to their competition, is much neglected." Again, "*our old* accustomed breeds are unnoticed." In the most approved practices of breeding stock, perhaps no better reason need be given for a change, than this very fact, that it is *our old accustomed breed*, on which a cross would be beneficial for that cause only. As the disadvantage of breeding "in and in," for a length of time, has been long admitted, the principle of a change of breed, or cross, by judicious selections, has, it is believed, induced almost universal assent and practice.

'Some contend that a given weight may be placed on any part of animals to correct a deficiency; and others that every disposition and property may be improved by a skilful observation and practice herein. The attention of agriculturists in Europe, has been for the greater part of the last century engaged in this process. In England more especially, if we can believe all we see — or all we hear — or any part of it, — animals of extraordinary production, as well as those of great beauty, size and power, with a favourable disposition to fatten, have been brought to view. Instances might be here quoted, but they are too well known to need it! Wherever, in any country, a judicious selection of stock has been in careful continued practice, we must shut our eyes, and seal up our senses not to perceive the beneficial result. And why should we doubt our power in that particular? It seems the all wise intention in our condition that we should cultivate and improve every thing about us! And do we not so do? How is it with the horse and various other animals? Are they not bred and reared for various uses, by careful selection and attention? And why should we easily and indolently admit that nothing is to be effected in our cattle, forming, as they do the greatest sources of our comfort and support?

'But though our efforts in this country may have been less strenuous and uniform — and for a shorter period of time — still we do not want proofs of what may be done at home. Our cattle are susceptible of improvement, as the Sutton race will show. Those who most dislike the imported breed tell of some native in their neighbourhood which is superior. Be it so! Our stock was mostly derived from Great Britain, and is doubtless as capable of improvement.

'All that can be said, is, that when *that* which time only can produce has for nearly a century been in careful progression, a prudent consideration will avail of the advantage.

'It is further complained "that much is said of the imported, and little or nothing of our native stock." If this alludes to any general expression of opinion it will have its due weight, and no more. But the object of the Massachusetts Agricultural Society has been to promote a *judicious selection*, as the *great thing necessary*, — and so their committees have uniformly urged.

The premiums on milch animals have been mostly given to native stock, it is believed — some to the imported breed to be sure — the far greater number of the former makes this natural. In many cases the richness of the milk, in the imported breed, has been remarkable — and their general size, proportion and beauty, has been thought to exceed our old race.

'The disappointment of a farmer, who has paid a large price for an animal (as has occurred) that has long legs, and "a bag that is difficult to be found," is to be regretted, — but these things will sometimes happen. But it is earnestly contended for in Europe, and by many here, that where there has been a long transmission of improved stock, this occurs much more rarely.

'The improved short-horns are not generally esteemed a long-legged race — many of them are great milkers — though for this property they are thought by some to have too great a tendency to become fat. By this facility they often disappoint those who wish to increase their breed. This disposition to fatten is so felt in England, that at their Smithfield cattle-show last year, it was proudly said, "Foreigners may boast of their sunny climes, — of the spontaneous produce of their soil, — of their grapes, and their wine, and their olive yards, — but no land but England can so boast of their *Fat Cattle Show.*"

'The object of the Trustees of the Massachusetts Agricultural Society, is to encourage whatever is connected with the great staples of the country — not to write down one race of cattle and set up another. Whatever means are at hand, let them be made use of. But if others, and superior, can be had from abroad — brought home and used to greater advantage, let us not be too stedfast in our old habits and practices, lest we should perceive, too late, that we have stood still whilst others have advanced.'

There has been much controversy in the *New England Farmer* and the *American Farmer*, relative to the American and foreign breeds of cattle. We have not room for a review of these altercations and shall not hazard a decision relative to the points in dispute. The testimony of one or two competent judges, whose knowledge of the subject is derived from, or fortified by experience, may be of use, and we shall therefore lay it before our readers.

Extract from a communication made by his Excellency Levi Lincoln, Governor of Massachusetts, President of the Worcester County Agricultural Society, to John Hare Powell, Esq.

'Upon the subject of *Denton's* * progeny, I should fear to write to any one less observing and sanguine than yourself. With nineteen of them of different grades and ages, in my possession, I can safely say, that my most confident anticipations have been entirely answered. I have seven heifers in milk, four of them 3 years, and three 2 years old ; and for richness in quality, and abundance in quantity, they are not excelled by the very best cows *of any age* of the native stock. A heifer of 3 years, with her second calf, has not been dry since she dropped her first, having given four quarts on the morning of her second calving.

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* Denton was a bull of the short horn breed, owned by Stephen Williams, Esq. of Northboro', Mass.

'Next to the Merino sheep, I consider the introduction of the short horns as the richest acquisition to the country, which agriculture has received. For the dairy and the stall, I speak with the utmost confidence of their pre-eminence. From my three years old heifers, I have calves of the most promising appearance, and greatly excelling any I have before seen. One of the heifers gives from 16 to 20 quarts of the richest milk by the day, since calving ; the other a little less, from the circumstance of having been in milk continually for more than a year ; but her milk is in no degree inferior in quality. The last season she gave eleven quarts at a milking, with grass only, and this not unfrequently. They keep as easily as the native stock, and are as hardy. I have this year a three-fourths *heifer* calf, from a half blood of Denton by *Admiral,* the famous bull sent out by Sir Isaac Coffin, to the Massachusetts Agricultural Society, and two others by the celebrated bull Cœlebs, on Denton's half blood. They are fine promising animals, although in no respect superior to the *three-fourths of Denton.* I have no knowledge of the properties of this stock for labour, never having altered but one of the males. I cannot, however, perceive any reason to doubt their value in this particular. Their form indicates great power, and they have much quietness and docility.'

Mr C. Robinson, of Southington, Conn., an experienced breeder of cattle, asserts that 'the Holderness, Denton and Short-horn breeds are all of them superior to our native breeds as milkers. There may occasionally be found among the thousands of cows of our native breeds, here and there one possessing remarkable properties as a milker. But every person, who has given the breeds above referred to a fair trial, will, I doubt not, agree with me that *they are in general better milkers than our native cows.* * * *

'A brother-in-law of mine, Mr W. J. Townsend, has on his farm in the vicinity of New Haven, a cow of the short-horned breed, which in size, form and quality is, I think I may safely say, second to no other cow in America, either of native or foreign breed. She was imported from London by Henry Degroot, Esq., was purchased for him there by an eminent breeder and dealer in stock as the best cow in England. She brought, since she came into possession of Mr

Townsend, three fine calves. For months after bringing each of her calves she has given thirty measured quarts of milk daily, and is with difficulty prevented from continuing in milk to the day of her calving.'

The following remarks on a late sale of the celebrated cattle, belonging to JOHN HARE POWELL, Esq. of Philadelphia, are taken from Poulson's Advertiser: —

'There are about twenty or thirty head of the full blood, besides nearly as many of the common and mixed blood. Among the former is the celebrated Bellina, the famous butter cow: In her appearance she is far below many of her companions, though when critically examined her *points* are all good. The straight back — the perfect level of the spinal column from the horns to the tail, — the square sides, the wide hips, the full brisket, the intelligent countenance, and wide spreading bag, are all there; but she makes a pound of butter at every milking, and hence she has not the sleek fat sides, and the *filling up* so necessary to a finished and beautiful subject. She illustrates the idea perfectly, which we have so often inculcated, that a deep milker or a great butter yielder cannot easily be kept fat. She illustrates another position we have advanced, that milk from different cows, apparently of equal richness, is very differently constituted. In some cheesy matter and whey prevail, in others cheesy matter and oil, and in others oil and whey prevail with but a slight quantity of cheesy matter. The first is common milk, affording a small quantity of cream, and poor skim milk; the second affords a medium quantity of cream, and makes good cheese, and good skim milk; the last affords a very large quantity of cream, no cheese scarcely, and very poor skim milk—so poor, indeed, that it is scarcely fit for use. This latter is the case with Bellina; when her milk has stood the proper length of time, the cream, (the milk being three or four inches deep), is nearly half an inch thick, and so firm that it will almost bear lifting like a buck wheat cake, the skim milk being very inferior. Mrs Barnitz took about half a pint of her cream in a bowl, and in a few minutes produced six ounces of the finest butter we ever tasted, by simply stirring it with a tea spoon. The buttermilk produced was less than a small wine glass full, and that quite of a poor quality. This cow, unlike the generality of her breed, has coarse hair, and is of ordinary size, and as before remarked, would be taken for an ordinary animal, except upon critical examination by a very good judge. Very high offers have been made for her and her calves.'

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